

A Comparative Study of United States Service Members With and Without a History of  
Inpatient Psychiatric Hospitalization on Post-Deployment Trauma, Depression, and  
Hazardous Alcohol Use Symptoms

by

Jennifer L. Bakalar

Thesis submitted to the Faculty of the  
Medical and Clinical Psychology Graduate Program  
Uniformed Services University of the Health Sciences  
In partial fulfillment of the requirements for the  
degree of Masters of Science  
2014

The views expressed in this thesis are those of the author and do not reflect the  
official policy of the Department of Army/Navy/Air Force, Department of Defense, or  
U.S. Government

## **ACKNOWLEDGEMENTS**

This project was made possible through the contribution and collaboration of many individuals. I would like to thank my thesis advisor, Dr. Marjan Holloway, whose guidance was instrumental in designing and conducting my Master's project. I also would like to thank my Master's committee members, Dr. Mark Ettenhofer and Dr. Jeffrey Goodie. Both have provided invaluable guidance and feedback that helped shape and strengthen this project.

I would like to thank Dr. Elisabeth Carlin for being my research partner over the past three years. I am not only grateful to acknowledge her as a collaborator, but also as a cherished friend and role model.

Many thanks to LTC Geoffrey Grammer for serving as the WRNMMC Principal Investigator on this project and to Mr. Germaine Allen and Mr. Christopher Davis for their assistance with the data acquisition process. From the Armed Forces Health Surveillance Center, I would like to thank Drs. Angelia Eick-Cost and Hala Nsouli for their support of this project and for playing an integral role in data acquisition.

I would like to acknowledge Dr. Cara Olsen and Ms. Kanchana Perera for their invaluable statistical guidance and Mr. Robert Wheeler for his assistance with WRNMMC and USUHS IRB procedures. I would also like to acknowledge the members of the Laboratory for the Treatment of Suicide-Related Ideation and Behavior for their ongoing support.

Finally, I would like to acknowledge my family, the 2010 MPS cohort, and my friends who have provided unconditional support not only over the course of this project, but throughout the entirety of my graduate education.

## **DEDICATION**

For P and all of the men and women in uniform who defend the freedom of the  
United States of America.



UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES  
F. EDWARD HÉBERT SCHOOL OF MEDICINE  
4301 JONES BRIDGE ROAD  
BETHESDA, MARYLAND 20814-4799



September 17, 2013

GRADUATE PROGRAMS IN  
THE BIOMEDICAL SCIENCES  
AND PUBLIC HEALTH

APPROVAL SHEET

*Ph.D. Degrees*

Interdisciplinary

- Emerging Infectious Diseases
- Molecular & Cell Biology
- Neuroscience

Departmental

- Clinical Psychology
- Environmental Health Sciences
- Medical Psychology
- Medical Zoology

Physician Scientist (MD/Ph.D.)

Doctor of Public Health (Dr.P.H.)

*Master of Science Degrees*

- Public Health

*Masters Degrees*

- Military Medical History
- Public Health
- Tropical Medicine & Hygiene

*Graduate Education Office*

Eleanor S. Metcalf, Ph.D., Associate Dean  
Bettina Arnett, Support Specialist  
Roni Bull, Support Specialist

*Web Site*

<http://www.usuhs.mil/graded>  
[http://usuhs.mil/geog/gradpgm\\_index.html](http://usuhs.mil/geog/gradpgm_index.html)

*E-mail Address*

[graduateprogram@usuhs.mil](mailto:graduateprogram@usuhs.mil)

*Phone Numbers*

Commercial: 301-295-9474  
Toll Free: 800-772-1747  
DSN: 295-9474  
FAX: 301-295-6772

Title of Thesis: "A Comparative Study of United States Service

Members With and Without a History of Inpatient Psychiatric

Hospitalization on Post-Deployment Trauma, Depression, and

Hazardous Alcohol Use Symptoms"

Name of Candidate: Jennifer L. Bakalar  
Medical & Clinical Psychology  
Master of Science  
September 17, 2013

Thesis and Abstract Approved:

Margan G. Holloway, Ph.D.  
Margan G. Holloway, Ph.D.  
Department of Medical & Clinical Psychology  
Thesis Advisor

9/18/2013  
Date

Mark Ettenhofer, Ph.D.  
Mark Ettenhofer, Ph.D.  
Department of Medical & Clinical Psychology  
Committee Member

9/18/13  
Date

Jeffrey Goodie, Ph.D., ABPP  
Jeffrey Goodie, Ph.D., ABPP  
Department of Medical & Clinical Psychology  
(secondary appointment)  
Committee Member

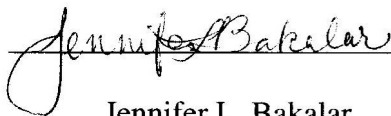
18 Sept 13  
Date

## **COPYRIGHT STATEMENT**

The author hereby certifies that the use of any copyrighted material in the thesis manuscript entitled:

A Comparative Study of United States Service Members With and Without a History of Inpatient Psychiatric Hospitalization on Post-Deployment Trauma, Depression, and Hazardous Alcohol Use Symptoms

is appropriately acknowledged and, beyond brief excerpts, is with the permission of the copyright owner.

A handwritten signature in cursive script, reading "Jennifer L. Bakalar", is written over a horizontal line.

Jennifer L. Bakalar

September 27, 2013

## **ABSTRACT**

A Comparative Study of United States Service Members With and Without a History of Inpatient Psychiatric Hospitalization on Post-Deployment Trauma, Depression, and Hazardous Alcohol Use Symptoms

Jennifer L. Bakalar, MS, 2014

Thesis directed by: Marjan G. Holloway, Ph.D, Associate Professor, Medical & Clinical Psychology

**Background:** The prevalence of mental disorders in the United States (U.S.) military has increased significantly since the onset of Operation Enduring Freedom (OEF) in 2001 and Operation Iraqi Freedom (OIF) in 2003 and mental disorders are currently the leading reason for admission among U.S. service members. However, despite the growing population of psychiatrically hospitalized service members, no studies to date have examined how these service members compare to the general military population on prevalence of psychiatric symptoms and hazardous alcohol use following deployment.

**Purpose:** This study compared a sample of U.S. service members with and without a history of inpatient psychiatric hospitalization to determine 1) if the two samples differed on psychiatric symptoms as reported on post-deployment health assessments (PDHA) and post-deployment health reassessments (PDHRA), 2) if PTSD and MDD screens on the PDHA would predict hazardous alcohol use screen outcome on the PDHRA, and (3) if

PDHA PTSD and MDD screens would moderate the relationship between inpatient psychiatric history and the PDHRA hazardous alcohol use screen. Methods: Data for two samples of U.S. service members with and without a history of inpatient psychiatric hospitalization was obtained from the Defense Medical Surveillance System (DMSS) for this retrospective cohort study. Chi-square and logistic regression analyses were conducted to test study hypotheses. Results: Previously psychiatrically hospitalized service members demonstrated significantly higher rates of positive PDHA PTSD screens (10.6% versus 4.1%) and MDD screens (12.6% versus 3.7%) and PDHRA hazardous alcohol use screens (8.9% versus 4.1%) than controls. PDHA-reported MDD and PTSD screens did not significantly predict PDHRA TICS alcohol screen in either sample. Finally, PDHA PTSD and MDD screens did not moderate the relationship between prior inpatient psychiatric history and PDHRA hazardous use alcohol screen. Conclusion: U.S. service members with a history of inpatient psychiatric hospitalization who deploy following discharge report significantly higher rates of post-deployment PTSD, MDD, and AUD symptoms, although this study did not find support for PTSD and MDD as unique predictors of subsequent hazardous alcohol use. These findings highlight previously psychiatrically hospitalized service members as a vulnerable subset of the military population warranting careful mental health assessment surrounding deployment. Implications of using the PDHA and PDHRA to screen for psychiatric disorders in this population following deployment are discussed.

## TABLE OF CONTENTS

LIST OF TABLES .....	x
LIST OF FIGURES .....	xi
CHAPTER 1: INTRODUCTION .....	12
CHAPTER 2: BACKGROUND .....	14
Inpatient Psychiatric Hospitalizations in the U.S. Military .....	14
Burden of Psychiatric Hospitalization for the U.S. Military .....	15
Characteristics of U.S. Service Members Admitted for Inpatient Psychiatric Hospitalization .....	16
Disposition Following Inpatient Psychiatric Hospitalizations in the U.S. Military .....	17
Psychiatric Consequences of Deployment .....	18
Hazardous Alcohol Use and Alcohol Use Disorders in the U.S. Military .....	19
Alcohol use and deployment .....	20
Comorbid Psychiatric and Substance Use Disorders .....	22
Comorbid PTSD and Alcohol Use Disorders .....	23
Etiologic models of comorbid PTSD and alcohol use disorders .....	24
Comorbid Depression and Alcohol Use Disorders .....	25
Purpose and Significance .....	27
Aims and Hypotheses .....	28
CHAPTER 3: METHODS .....	29
Research Design .....	29
Study Population .....	30
Study Procedures .....	30
Case Selection for Group 1 from the Former WRAMC Medical Records ...	30
Data Extraction – DMSS .....	31
Case selection for Group 2 – DMSS .....	32
Deployment-related data .....	33
Study Databases .....	33



Measures.....	34
Post-Deployment Health Assessment (PDHA).....	34
Post-Deployment Health Reassessment (PDHRA).....	36
Human Subjects Protection .....	37
Data Analytic Approach.....	38
CHAPTER 4: RESULTS .....	41
Overall sample characteristics.....	41
Group 1 Characteristics .....	41
Group 2 Characteristics .....	43
Observed Differences Between Groups .....	43
Results for Aim 1 .....	44
Results for Aim 2 .....	44
CHAPTER 5: DISCUSSION .....	46
Summary and Interpretation of Study Findings .....	46
Limitations .....	51
Strengths.....	52
Clinical Implications and Future Directions .....	53
Future Directions.....	56
APPENDIX A: VARIABLES PROVIDED BY AFHSC .....	66
APPENDIX B: DD 2796 POST-DEPLOYMENT HEALTH ASSESSMENT, 2003 VERSION.....	68
APPENDIX C: DD 2796 POST-DEPLOYMENT HEALTH ASSESSMENT, 2008 VERSION.....	72
APPENDIX D: DD 2900 POST-DEPLOYMENT HEALTH REASSESSMENT, 2005 VERSION.....	79
APPENDIX E: DD 2900 POST-DEPLOYMENT HEALTH REASSESSMENT, 2008 VERSION.....	83
REFERENCES.....	88

## LIST OF TABLES

<b>Table 1.</b> Descriptive statistics for Group 1 with an inpatient psychiatric history (N = 246) and Group 2 with no inpatient psychiatric history (N = 246) .....	59
<b>Table 2.</b> Documented psychiatric diagnoses for Group 1 (N = 246).....	60
<b>Table 3.</b> PDHA PTSD and MDD screen and PDHRA TICS alcohol screen results among inpatient (Group 1; N=246) and control (Group 2; N=246) cases. ....	61
<b>Table 4.</b> Summary of unadjusted and adjusted logistic regression models predicting positive Two-Item Conjoint Screen (TICS) from history of inpatient psychiatric hospitalization (N = 492).....	62
<b>Table 5.</b> Summary of unadjusted and adjusted logistic regression models predicting positive Two-Item Conjoint Screen (TICS) in inpatient cases (Group 1; N = 246) .	63
<b>Table 6.</b> Summary of logistic regression model predicting positive Two-Item Conjoint Screen (TICS) in control cases (Group 2; N = 246).....	64
<b>Table 7.</b> Summary of logistic regression model testing moderation of inpatient psychiatric history and TICS score by PTSD and Depression screens (N = 492) ....	65

## LIST OF FIGURES

<b>Figure 1.</b> Identification of Group 1 cases based on WRAMC psychiatric admission dates of 2001-2010. ....	58
----------------------------------------------------------------------------------------------------------------	----

## **CHAPTER 1: INTRODUCTION**

Since the onset of Operation Enduring Freedom (OEF) in 2001 and Operation Iraqi Freedom (OIF) in 2003, mental disorders have become a significant concern for the United States (U.S.) military, carrying implications for the health and well-being of U.S. service members as well as overall force readiness. According to the Armed Forces Health Surveillance Center (1), mental disorders became the leading admission reason for inpatient hospitalizations in the U.S. military as of 2010 and rates of inpatient psychiatric hospitalization have continued to rise since then (3). However, despite the increasing rates of mental health-related inpatient hospitalizations in the U.S. military, there is a dearth of empirical research examining the impact of continued military service on psychiatric morbidity in previously hospitalized service members who return to duty after discharge. Further, there have been no published studies to date examining the association between deployment and psychological functioning of previously psychiatrically hospitalized service members.

Deployment is one of the most stressful experiences associated with military service during the OEF/OIF era due to the high operational tempo and hostile environment (55). In nonclinical populations, there is robust empirical support for the psychiatric consequences of OEF/OIF deployment(s), including high rates of reported symptoms of mood, anxiety, and substance use disorders on post-deployment health assessments in both the active (30, 47) and reserve components (5). Therefore, it is reasonable to predict that a known clinical sample of service members would be more vulnerable to these deleterious consequences of deployment, which may further

jeopardize their health, their military careers, and the broad Department of Defense (DoD) mission (74).

The broad objective of this thesis is to address the aforementioned gaps in the scientific literature pertaining to psychiatric outcomes for active duty U.S. service members who are admitted for inpatient hospitalization, return to duty, and deploy following discharge from the hospital. Specifically, this thesis examined the psychiatric symptoms and hazardous alcohol use behaviors reported by U.S. service members who deploy following an inpatient psychiatric admission as compared to a sample of U.S. service members with no such history. The findings from this study will contribute to the scientific literature on the psychiatric consequences of deployment in support of OEF/OIF, which may be used to inform research and clinical treatment efforts to address the unique needs of this subset of the military population.

This Master's thesis manuscript is divided into six sections. These sections include: 1) Background; 2) Purpose and Significance; 3) Aims and Hypotheses; 4) Methods; 5) Results; and 6) Discussion. The Background section provides an overview of the significance of inpatient psychiatric hospitalization in the U.S. military, followed by a review of the literature on: 1) the psychiatric consequences of deployment with a focus on the development of posttraumatic stress disorder (PTSD), major depressive disorder (MDD), and alcohol use disorders (AUD); and 2) the implications of comorbid psychiatric disorders and AUDs that are relevant to the subset of the military population who have an inpatient psychiatric history. The Purpose and Significance section summarizes gaps in the current scientific literature relating to how U.S. service members with an inpatient psychiatric history compare to U.S. service members with no such

history with respect to psychiatric symptoms and hazardous alcohol use behaviors reported following deployment including a description of how the present study addressed these gaps. The Aims and Hypotheses section outlines the specific objectives and predicted findings of this thesis. The Methods section outlines the research design, sample, measures, procedures, human subjects protection, and data analytic approach for the study. The Results section describes the data analytic procedures in additional detail as well as the findings for the hypotheses associated with each specific aim. The Discussion section provides a summary of the study findings, an interpretation of the results in the context of the scientific literature including research and clinical implications, a discussion of study limitations and strengths, and proposed future directions for further research.

## **CHAPTER 2: BACKGROUND**

### **INPATIENT PSYCHIATRIC HOSPITALIZATIONS IN THE U.S. MILITARY**

Psychiatric disorders are an increasing concern for the DoD and the Armed Forces, especially given that psychiatric hospitalizations are significantly more likely to lead to premature separation from the military than hospitalization for a physical illness or injury (29, 30). Psychiatric hospitalization rates have increased sharply and steadily over the last decade since the onset of conflicts in Iraq and Afghanistan. According to the Armed Forces Health Surveillance Center (2), the overall rate of hospitalization for any reason in the military in active component members has increased by approximately 8% to 59.3/1,000 person-years during the OEF/OIF war period (defined as October 2001-June 2012) as compared to 54.9/1,000 person-years during the pre-war period (defined as January 1998-August 2001). Psychiatric hospitalizations have increased by 35% during

the OEF/OIF period and mental disorders accounted for approximately two-thirds of the total excess hospitalizations documented during that time; injury/poisoning-related events combined with mental disorders accounted for approximately 90% of all additional inpatient bed days (2). In light of this disproportionately large increase in inpatient psychiatric hospitalizations during the OEF/OIF era, research and clinical efforts are increasingly being focused on addressing the mental health needs and psychological well-being of U.S service members (4).

### **Burden of Psychiatric Hospitalization for the U.S. Military**

In aggregate, the top four leading psychiatric diagnoses in active duty U.S. service members in 2012 (substance abuse disorders, mood disorders, anxiety disorders, and adjustment disorders) accounted for approximately 44% of hospital bed days for all inpatient hospitalizations in active duty personnel. All mental disorders combined accounted for approximately half (49.6%) of hospital bed days (4); the remaining bed days were accounted for by physical injury or medical conditions. Between the service branches, the U.S. Army reports approximately twice as much duty time lost due to inpatient psychiatric hospitalization than the U.S. Marine Corps, and triple the amount of all other branches. In total, 573 person-years of lost duty time were reported in 2010 due to psychiatric hospitalization (1).

The annual number of hospital bed days attributed to the four leading mental disorders has risen sharply over the past four years. Between 2001-2006, numbers remained relatively stable between approximately 75,000-80,000 annual hospital bed days for mental disorders. In 2007, hospital bed days rose to over 100,000, which more than doubled to over 200,000 hospital bed days for mental disorders in 2010 (1). In contrast, annual hospital bed days attributed to maternal conditions, now the second

leading cause of hospitalization in the U.S. military, has remained stable at approximately 70,000 between 2001-2010, which translated to 178 person-years of lost duty in 2010 (1).

Psychiatric treatment poses a significant burden on individual service members, their families, military peers, and leadership; furthermore, the delivery of such care in a timely and effective manner places tremendous pressure on providers and the healthcare system within the DoD (74). Attrition of service members who experience psychiatric problems is another concern that poses both emotional (e.g., unit morale) as well as financial (e.g., loss of a trained service member) consequences for the DoD. More specifically, service members who are admitted for inpatient psychiatric hospitalization are over five times more likely to separate from military service within three months of discharge and approximately twice as likely to separate from military service within two years of discharge than service members who are hospitalized for medical reasons (29, 30), which represents a disproportionately high loss of manpower in this subset of the military population.

### **Characteristics of U.S. Service Members Admitted for Inpatient Psychiatric Hospitalization**

In general, inpatient psychiatric hospitalization in the U.S. military tends to be associated with being young, single, and female (29). However, although the population of service members admitted for psychiatric hospitalization contains a greater proportion of females as compared to the military as a whole (24% versus 15%; 4, 12), approximately three quarters of the inpatient psychiatric patient population are male.

Among male service members psychiatrically admitted for mental disorders in 2012, the four most frequent diagnoses were adjustment reaction (38%), alcohol dependence (13%), anxiety disorders (13%), and mood disorders (10%). Among female



service members admitted for mental disorders in 2012, the four most frequent psychiatric diagnoses were adjustment reaction (38%), anxiety disorders (17%), episodic mood disorders (17%) and mood disorders (10%). Alcohol dependence was the fifth leading diagnosis for active duty females, accounting for 6% of psychiatric hospitalizations (4).

Out of the service branches, the U.S. Army had the highest rate of psychiatric hospitalizations for mental disorders out of all diagnostic categories within the service branch (28.1 per 1,000 person-years), followed by the Marine Corps (11.9 per 1,000 person-years), Air Force (11.3 per 1,000 person-years), Navy (10.4 per 1,000 person-years), and Coast Guard (8.2 per 1,000 person-years). Only the U.S. Army and Marine Corps mental disorder hospitalization rates were greater than the hospitalization rates reported for diagnostic categories associated with pregnancy and childbirth (4).

### **Disposition Following Inpatient Psychiatric Hospitalizations in the U.S. Military**

Despite the increasing rates of inpatient psychiatric hospitalizations in the military, there is a limited body of scientific literature describing the clinical and occupational outcomes for OEF/OIF-era active and reserve component service members who received inpatient psychiatric care at some point during their military service. However, one of the findings that has remained stable over time is the increased likelihood of separation from the military following an inpatient psychiatric admission. In the pre-OEF/OIF period, Hoge and colleagues (32) found that of a sample of soldiers hospitalized in 1998 with a primary discharge diagnosis of a mental disorder, nearly half left military service within six months, two-thirds had left military service within two years, and only one third remained in service beyond two years. In contrast, of a sample

of soldiers hospitalized for medical reasons, 11% left military service within six months of discharge, 28% left in the first two years after discharge, and 72% remained in service more than two years after discharge from hospitalization. Further, the soldiers who were psychiatrically hospitalized were significantly more likely to be separated involuntarily as compared to the soldiers who were hospitalized for other reasons. Hoge and colleagues (30) found similar patterns of attrition in a sample of OEF/OIF veterans who deployed between 2003-2004.

### **PSYCHIATRIC CONSEQUENCES OF DEPLOYMENT**

The occupational implications of psychiatric hospitalization combined with the increasing admission rates during the OEF/OIF era highlight the importance of addressing the psychiatric consequences of deployment. Psychiatric disorders are one of the leading reasons that service members are evacuated from theater. Between 2004-2007, 5% of service members deployed in support of OIF and 6% of service members deployed in support of OEF were medically evacuated from theater (for any reason), with approximately one third of all evacuees returning to full duty (20). Psychiatric disorders were the fourth leading reason for a medical evacuation behind musculoskeletal, combat, and neurological injuries, representing 9-10% of all medical evacuations. However, only 8% of service members evacuated for psychiatric disorders returned to full duty (20, 76). Rundell (60) obtained similar findings, with only 6% of psychiatric evacuees returning to full duty.

Along with the significant number of service members evacuated from theater for mental health reasons, the broad psychiatric sequelae of deployment have acquired increased attention in military clinical research and practice during the OEF/OIF era. In

addition to physical injuries and hazardous environmental exposures, service members are reporting a range of psychiatric symptoms associated with mental disorders including posttraumatic stress disorder (PTSD) and major depressive disorder (MDD) upon return from deployment (25, 31, 54).

Further, research has shown that the endorsement of psychosocial stressors and psychiatric symptoms increases over time during the reintegration period. Among active duty soldiers, Milliken and colleagues (47) found a four-fold increase in the frequency of interpersonal conflict, over a two-fold increase in MDD symptoms, and a 40% increase in positive PTSD screens as reported on post-deployment health reassessments (PDHRAs) as compared to the post-deployment health assessment (PDHA), which is completed immediately following the return from deployment, approximately three months before the PDHRA. Among the National Guard and Reserve components, these increases were significantly higher. It remains unclear whether these findings are better explained by a lower prevalence of stressors and symptoms in the period immediately following deployment or an under-reporting of stressors or symptoms due to the desire to avoid a delay in returning home.

#### **HAZARDOUS ALCOHOL USE AND ALCOHOL USE DISORDERS IN THE U.S. MILITARY**

In parallel to the growing problem of psychiatric disorders, hazardous alcohol use and alcohol use disorders (AUD) have also been a significant problem for the U.S. military during the OEF/OIF era, which is especially concerning in individuals with comorbid psychiatric symptoms and disorders. Historically, alcohol consumption has been deeply embedded in U.S. military culture as a means to cope with stress and as a staple in social settings (6), which is compounded by the traditionally wide availability of alcohol on military installations. However, during the Vietnam War era, the prevalence

and extent of alcohol consumption raised concerns in the DoD, which contributed to a comprehensive investigation of the problem and a series of DoD Directives (DoDDs) issued in the early 1970s addressing illicit drug and alcohol abuse. Over time, the DoDDs were believed to be highly effective at reducing rates of illicit drug use, but rates of heavy alcohol consumption have remained steady.

According to the 2008 DoD Survey of Health Related Behaviors in Active Duty Personnel (12, 13), there was a statistically significant decrease in illicit drug use from 27.6% of active duty service members in 1980 to 3.4% in 2002, which was attributed to the strict enforcement of the DoDDs. In contrast, heavy drinking (defined as five or more drinks on a typical occasion, at least once per week), was reported in 20.8% of active duty service members in 1980 and 18.5% in 2005, which is not a statistically significant decrease (13).

In the anonymous 2011 DoD Health Related Behaviors Survey (8), the definition of heavy drinking use was revised to be the consumption of at least 14 drinks per week for males and at least 7 drinks per week for females. The average consumption of 4 to 14 drinks per week for males and 4 to 7 drinks per week for females was defined as moderate drinking. According to the new definitions, 8.4 % of active duty service members reported being heavy drinkers and 17.5% reported being moderate drinkers (8).

### **Alcohol use and deployment**

Although alcohol consumption is prohibited for service members while deployed to Iraq and Afghanistan according to General Order Number 1 (GO1), which was released in 1990, and its most recent revision, GO-1C (United States Central Command, 2013; 73), alcohol use is prevalent among service members returning from deployment (13, 14). Deployment in support of OEF/OIF has been associated with increased rates of

reported alcohol use (31), especially for service members who report combat exposure on post-deployment assessments (36, 75). Hoge and colleagues (31) found that Army soldiers were over 50% more likely to endorse the subjective statements of alcohol misuse that comprise the Two-Item Conjoint Screen (TICS; 16) for alcohol abuse (i.e., “Have you used alcohol more than you meant to?” and “Have you felt you wanted or needed to cut back on your drinking?”) after deployment as compared to responses collected before deployment; Marines were 2.7-2.9 times more likely to endorse these statements after deployment. However, while the Marines demonstrate the highest self-reported rates of heavy drinking behaviors across all service branches (8), the Army demonstrates a markedly higher rate of AUDs than all other services, which may be related to the increased likelihood of immediate separation without treatment for AUDs in the Marine Corps (49).

Heavy drinking is reported significantly more often by male service members than by female service members and by enlisted personnel more often than commissioned officers (8, 14). The consequences of hazardous alcohol use in service members and Veterans include higher rates of impulsive and reckless behavior (8, 62, 75) and decreased productivity (14). Santiago and colleagues (62) found that soldiers who screened positive for alcohol misuse by endorsing at least one item on the TICS (16) were five times more likely to endorse drinking and driving and nearly six times more likely to ride as a passenger with a drunk driver as compared to soldiers who did not endorse either item. Statistically significant predictors of alcohol-related behaviors in this study included male gender, junior enlisted status, and reserve or National Guard component, although reserve component and National Guard soldiers were found to be 66% less

likely than their active duty counterparts to receive a referral for alcohol-related treatment (62).

Despite concerning rates of post-deployment hazardous alcohol use, most service members who report alcohol concerns are not referred for treatment. Milliken and colleagues (47) found that while soldiers openly endorsed alcohol misuse at about the same rates as they endorsed mental health concerns, only 2% of soldiers who endorsed hazardous alcohol use on a PDHRA were referred for treatment and of those who were referred, only about 22% were seen within 90 days of the referral. Santiago and colleagues (62) found that only 0.2% of a sample of soldiers who endorsed alcohol misuse on post-deployment screenings were referred for treatment.

#### **COMORBID PSYCHIATRIC AND SUBSTANCE USE DISORDERS**

While psychiatric disorders and substance use disorders (SUD) each lead to deleterious sequelae, the co-occurrence of both disorders (i.e., dual diagnosis) has consistently been shown in the scientific literature to be more detrimental than a diagnosis of a single disorder in either category in both civilian and military populations (18, 37, 57). Further, carrying a dual diagnosis has significant prognostic implications for individuals receiving both outpatient and inpatient psychiatric care. However, the findings pertaining to psychiatric inpatients are most germane to the present study. In civilian populations, substance abuse has consistently been the most common comorbid diagnosis among individuals admitted for acute psychiatric hospitalization, with approximately 30%-40% of psychiatric inpatients being diagnosed with a comorbid SUD; notably, AUDs are the most prevalent type of comorbid SUD (9, 61, 77). Psychiatric inpatients with comorbid SUDs have a markedly worse prognosis than patients without SUDs, such that they are more likely to report a lower overall quality of life, demonstrate

lower insight into their condition, and they are significantly more likely to be rehospitalized (61, 63, 77).

Similar associations between comorbid psychiatric disorders and SUDs have been obtained in military samples. In a study of dual diagnosis patients admitted to a Veterans Administration (VA) hospital, Ilgen and colleagues (34) found that 23% were readmitted within 90 days of discharge, although utilization of continuing care for SUDs in the 30 days after discharge notably reduced rehospitalization risk. Comorbid psychiatric disorders and SUDs have also been associated with higher rates of mortality among Veteran populations (57). Rosen and colleagues (57) found that mortality rates over a seven year period were 70% higher among dual diagnosis patients as compared to Veterans diagnosed with a single disorder and among the dual diagnosis sample, mortality rates were significantly higher for patients diagnosed with AUDs as compared to patients with other types of SUDs. Taken together, these findings highlight the negative implications of comorbid psychiatric disorders and AUDs in inpatient Veterans, but there is a relative paucity of published research on this topic in the active duty population.

### **Comorbid PTSD and Alcohol Use Disorders**

While the general co-occurrence of psychiatric disorders and SUDs is concerning in light of the poor prognosis for dual diagnosis patients, the specific co-occurrence of PTSD and AUDs is especially robust in the scientific literature and it is highly relevant to the military population given the high likelihood of trauma exposure and higher prevalence of AUDs in military versus civilian populations (12). In the U.S. general population, an epidemiological study revealed that approximately 42% of individuals (50) with PTSD also met criteria for an AUD. As compared to patients with PTSD or an

AUD alone, patients with both disorders have been found to have less social support, to be unemployed, and to have lower income, which carries implications for their ability to seek and engage effectively in treatment (53).

In military populations, AUDs have been independently associated with PTSD in both male and female service members (64). Factors associated with more severe PTSD symptoms and AUDs include trauma type (e.g., exposure to enemy hostility), deployment location (i.e., OIF was associated with more PTSD and AUDs than OEF), and number of deployments (5). While the highest rates of AUDs associated with deployment during the OEF/OIF era have been observed among younger service members (12, 49, 75), high rates of comorbid PTSD and AUDs and the corresponding deleterious sequelae have also been found in elderly Veterans (40, 68), which highlights the persistence and long-term negative impact of these co-occurring disorders.

### ***Etiologic models of comorbid PTSD and alcohol use disorders***

Given the empirically-supported association between PTSD and AUDs, numerous theoretical models have been proposed to explain the etiological relationship underlying the co-occurrence of the two disorders. Two related models that are especially relevant to the military, especially in the context of deployment as a significant stressor, are the temporal-ordering hypothesis (7, 19) and the self-medication hypothesis (18, 56). The temporal-ordering hypothesis (19) posits that the order of onset of PTSD and AUDs carries etiological and prognostic significance. While there are studies supporting AUDs as a risk factor for later trauma exposure and subsequent PTSD due to the physiological effects of alcohol (e.g., impaired judgment and disinhibition; 21), the predominant findings in the dual diagnosis literature indicate that that AUDs generally develop



following trauma exposure, which is supported in both civilian (19, 45, 69) and military (18) populations.

A primary theoretical explanation for the temporal ordering of PTSD preceding AUD onset is the self-medication hypothesis, which posits that individuals with PTSD use alcohol to alleviate distressing symptoms such as sleep disturbance and hyperarousal (56). Leeies and colleagues (39) obtained support for the face validity of the self-medication hypothesis in a community sample of PTSD patients, finding that 21.4% openly endorsed medicating their symptoms with substances; approximately two-thirds (67.3%) of those patients endorsed using only alcohol. However, despite the initial sedating properties of alcohol, it is known to impair sleep and the elevated anxiety associated with alcohol withdrawal exacerbates the hyperarousal symptoms of PTSD, which reinforces a negative cycle of alcohol abuse and psychological distress (35).

Both of these theories addressing the relationship between co-occurring PTSD and AUDs apply to military populations due to the high risk of trauma exposure during deployment and the prevalence, cultural significance, and negative clinical and occupational outcomes of alcohol use in the military. Further, service members with a pre-deployment history of psychiatric hospitalization may be especially vulnerable to resorting to alcohol for the purposes of self-medication given their established psychiatric morbidity, which may subsequently increase their risk of negative clinical, psychosocial, legal, and occupational outcomes.

### **Comorbid Depression and Alcohol Use Disorders**

In addition to the negative consequences of comorbid PTSD and AUDs among U.S. service members, the co-occurrence of MDD and AUDs is also concerning and

highly relevant to service members with a prior inpatient psychiatric history who deploy. While it is currently not well known how rates of co-occurring MDD and AUDs in previously psychiatrically hospitalized service members compare to the general military population, there is published research to support the association between MDD and AUDs in deployed service members as a whole (28, 65). Heltemes and colleagues (28) found that OEF/OIF Veterans who reported depressive symptoms were 4.2 times as likely to report alcohol abuse as those who did not report depressive symptoms. Similarly, in a sample of National Guard soldiers, Marshall and colleagues (43) found that those who reported a depressive disorder with onset during or after deployment were 3.9 times more likely to endorse post-deployment alcohol abuse.

While the association between comorbid MDD and AUDs has been well-established, there is comparatively less literature addressing etiologic models that clarify the nature of the relationship between comorbid MDD and AUDs than there is for PTSD and AUDs. The published research to date reveals mixed findings with respect to the temporal-ordering relationship between MDD and AUD onset with some studies supporting the onset of MDD preceding and/or independent of an AUD (42) and others reporting the onset of MDD as a consequence of an AUD (71).

In summary, high rates of reported symptoms associated with PTSD, MDD, and AUDs in the general military population following deployment during the OEF/OIF era have been well documented in the scientific literature and carry substantial health, occupational, and mission-related implications. However, despite an increasing inpatient psychiatric hospitalization rate in the military during the OEF/OIF era, there is currently no research to date examining how service members with a prior history of inpatient

psychiatric hospitalization compare to the general military population with respect to reporting these symptoms following deployment. Further, it is currently unknown whether the proposed temporal relationships between PTSD/MDD symptoms and AUD symptoms apply to this population.

## **PURPOSE AND SIGNIFICANCE**

As a result of the efforts of federal offices such as the AFHSC and publications including the *Medical Surveillance Monthly Report* (MSMR), there is a substantial amount of epidemiological data describing the medical and mental health events and risk factors associated with deployment since the onset of OEF/OEF, including the prevalence of psychiatric diagnoses among U.S. service members and rates of mental health service utilization. However, with the exception of a recent study reporting increased suicide rates among previously hospitalized service members (41), there is very limited published research reporting the psychiatric, psychosocial, or occupational outcomes for the highly vulnerable population who are admitted for inpatient psychiatric care aside from documented rates of military health care utilization and separation from military service. Further, there is a substantial body of dual diagnosis literature addressing comorbid psychiatric disorders and alcohol use disorders among both civilian and military psychiatric populations. However, there is a dearth of research examining hazardous alcohol use among the growing population of military service members with an inpatient psychiatric history, for whom hazardous alcohol use may have more severe consequences given the pre-existing vulnerability of this population.

The DoD invests substantial time and resources in training and caring for each service member, which is lost if service members separate prematurely from military

service. Further, early separation, especially in the context of a psychiatric problem and/or an AUD, is disruptive to the individual and his/her loved ones due to potential stressors such as legal charges associated with alcohol abuse, unemployment, and barriers to care. Therefore, every effort should be made to optimize rehabilitation efforts, prevent recidivism, and prevent premature attrition in service members who receive psychiatric care while serving in the U.S. military. Moreover, an understanding of the unique characteristics of this highly vulnerable group can inform mental health delivery within the VA healthcare system as well as other systems serving the needs of these individuals upon their entry back into the civilian sector.

The objective of the present retrospective cohort study is to acquire a better understanding of potential post-deployment differences in psychiatric symptoms and associated self-reported hazardous alcohol use in service members with and without a prior history of inpatient psychiatric hospitalization. The results of this study will advance the current scientific understanding of the post-deployment psychiatric functioning of an inpatient psychiatric sample as compared to a healthy control sample with no documented prior psychiatric history. These findings will contribute to a growing body of literature on the psychiatric sequelae of military service in support of OEF/OIF because of their practical utility in enhancing assessment and treatment efforts targeted to the needs of this highly vulnerable subset of the military population.

#### **AIMS AND HYPOTHESES**

**Aim 1:** To determine whether service members with and without an inpatient psychiatric history differ in their self-reported post-deployment hazardous alcohol use, as measured by the PDHRA Two-Item Conjoint Screen (TICS).

*Hypothesis 1:* Service members with an inpatient psychiatric history will be significantly more likely to endorse self-reported post-deployment hazardous alcohol use as measured by the PDHRA TICS alcohol screen than service members with no such history.

**Aim 2:** To examine the relationship between post-deployment PTSD and MDD screens (as measured by the PDHA) and subsequent self-reported hazardous alcohol use (as measured by the PDHRA TICS alcohol screen) among service members with and without an inpatient psychiatric history.

*Hypothesis 2a:* Post-deployment PTSD and MDD screens (as measured by the PDHA) will significantly predict self-reported hazardous alcohol use (as measured by the PDHRA TICS alcohol screen) among individuals with an inpatient psychiatric history.

*Hypothesis 2b:* Post-deployment PTSD and MDD screens (as measured by the PDHA) will significantly predict self-reported hazardous alcohol use (as measured by the PDHRA TICS alcohol screen) among individuals without an inpatient psychiatric history.

*Hypothesis 2c (exploratory):* Post-deployment PTSD and MDD screens (as measured by the PDHA) will moderate the relationship between prior inpatient psychiatric history and subsequent self-reported hazardous alcohol use (as measured by the PDHRA TICS alcohol screen) such that higher rates of positive PDHA PTSD and MDD screens will enhance the effect of a prior inpatient psychiatric history as a predictor of self-reported hazardous alcohol use.

## **CHAPTER 3: METHODS**

### **RESEARCH DESIGN**

A longitudinal, retrospective cohort design was used to examine psychiatric, military service, and deployment-related data obtained from the Defense Medical Surveillance System (DMSS) for U.S. service members with (Group 1) and without (Group 2) a history of inpatient psychiatric hospitalization(s) at the former Walter Reed Army Medical Center (WRAMC)<sup>1</sup>.

### **Study Population**

U.S. service members included in this study: 1) Were adults (at least 18 years old at the time of record entry), 2) Served on active duty or in the reserve component at some point between 2001-2010, 3) Deployed following the index hospitalization date, and 4) Had a completed, matched pair of PDHA and PDHRA documents stored in DMSS for the deployment following the index hospitalization date. Exclusion criteria include: 1) Service members who did not have a documented deployment following the index hospitalization date, and 2) Service members who deployed following the index hospitalization date, but did not have a completed, matched pair of PDHA and PDHRA assessments documented in DMSS for the deployment in DMSS. The final sample consisted of 258 index cases (Group 1) and 258 control cases (Group 2) frequency matched on age and sex.

### **STUDY PROCEDURES**

#### **Case Selection for Group 1 from the Former WRAMC Medical Records**

A comprehensive list of patients was generated with the assistance of a WRNMMC information technology (IT) technician who performed a query of archived

---

<sup>1</sup> Following the 2011 Base Realignment and Closure (BRAC) transition, the former WRAMC has closed and relocated to Bethesda, MD as a joint military medical facility, Walter Reed National Military Medical Center (WRNMMC). The name of the original facility was retained, as applicable, for clarity.

electronic medical records (EMRs) using the *Essentris* (22) system. The query produced a list of 15,041 admission entries of all patients hospitalized on the inpatient psychiatric unit with admission dates from January 1, 2001 through December 31, 2010.

Approximately 12% (N = 1,748) of these entries pertained to admissions for non-military personnel (e.g., dependents) and 56% (N = 8,383) of the admission entries were duplicates because individual patients may be entered into *Essentris* multiple times during a single admission upon transfer between inpatient units, including at the time of discharge. Therefore, the original list was cleaned to eliminate dependents and duplicate entries (i.e., admissions with the same SSN) in order to ensure that each individual patient's SSN and earliest documented former WRAMC admission date was represented once in the final dataset. The finalized Group 1 list contained 4,910 SSNs of service members with inpatient psychiatric hospitalizations at the former WRAMC with admission dates from 2001 to 2010. This list was provided to the Epidemiology and Analysis Division at AFHSC for two purposes: 1) to obtain DMSS data for each case and 2) to obtain a matched control group listing and associated data.

### **Data Extraction – DMSS**

Of the 4,910 inpatient SSNs provided to AFHSC, 146 (approximately 3%) did not have information documented in DMSS, which may have been the result of a clerical error in *Essentris* or misclassification of the case as an active duty service member. Therefore, the overall sample for the Group 1 database contained 4,764 cases. AFHSC extracted demographic data, military service-related data, and longitudinal medical and deployment-related data (see Appendix A for listing of variables) from DMSS for each case in Group 1 for a minimum of two and maximum of 12 years following the

documented discharge date from the *index* inpatient psychiatric hospitalization at the former WRAMC. The index inpatient psychiatric hospitalization was defined as the patient's first documented admission to the former WRAMC that occurred within the 2001-2010 time period from which the study sample was drawn. The index inpatient psychiatric hospitalization date was deidentified and subsequently defined by AFHSC as "Day 0". When applicable, subsequent inpatient psychiatric admissions and other time-dependent variables for Group 1 were coded by AFHSC by the number of days the event occurred after the index hospitalization date (i.e., an entry dated "150," refers to an event that occurred 150 days following the index admission date). The purpose of the "Day 0" classification was twofold: 1) It contributed to maintaining confidentiality and 2) It provided a standardized reference date for age-matching and calculation of other time-dependent variables in the study database.

### **Case selection for Group 2 – DMSS**

Next, an age and sex matched control sample of 4,764 service members with no prior documented inpatient or outpatient psychiatric history was identified by AFHSC (Group 2). For Group 2, AFHSC was instructed to identify service members with no documented inpatient or outpatient psychiatric history prior to "Day 0" for the corresponding Group 1 cases. Similar to Group 1, this parameter provided a standardized reference date for all Group 2 cases and ensured that Group 2 cases did not have a documented psychiatric history through the age that they were matched to Group 1. Also similar to the procedures used for generating Group 1 data, AFHSC extracted longitudinal demographic, medical, military service, and deployment-related data from DMSS for each case in the Group 2 database. A comprehensive, aggregate deidentified



dataset for both groups was subsequently created and electronically transferred to study investigators in an encrypted file.

### **Deployment-related data**

For both groups, all cases with at least one documented deployment occurring after Day “0” were identified by the author of this thesis. Only cases with a matched pair of PDHA and PDHRA assessments from the same deployment were included in the present study. PDHA and PDHRA assessments were matched by comparing the documented date of arrival in theater, date of departure from theater, and date of submission for the assessment form, which is consistent with matching procedures used in previously published studies analyzing PDHA and PDHRA data (47). If an individual had multiple documented deployments after Day “0”, the data for the first deployment with a complete matched PDHA and PDHRA assessment was used for the present study. Number of deployments was tested as a potential covariate to account for cases with multiple deployments.

### **Study Databases**

Two electronic databases were used to extract data for the study samples described above: 1) Essentris and 2) The Defense Medical Surveillance System.

*Essentris.* Essentris (22) is a medical software program used at the former WRAMC and WRNMMC in acute care, inpatient units to document medical data including medications, laboratory results, clinical notes, and diagnoses. Patient EMRs stored in Essentris are accessible to all medical professionals who are involved in patient care including physicians, nurses, and behavioral health professionals both in garrison

and abroad, which contributes to continuity of care and consistent medical documentation across clinical settings.

*Defense Medical Surveillance System (DMSS).* The DMSS database is a public health record database maintained by AFHSC. DMSS contains records for all individuals who have served on active duty in the U.S. military from 1989 through the present (59). Records that are stored in DMSS include demographic characteristics, military service history, health-related behaviors, combat and non-combat-related injuries, hospitalizations, ambulatory care visits, diagnoses, and other reportable medical events. Medical and behavioral health diagnoses documented in DMSS are coded according to the International Classification of Disease, 9<sup>th</sup> Revision (ICD-9; 48). DMSS data quality is comparable to other established health services data (46)

## **MEASURES**

In addition to the medical and military service-related data extracted from DMSS, deployment-related data was extracted from deployment health assessments stored in DMSS, which include measures of psychiatric symptoms and behaviors embedded in the body of the assessment.

### **Post-Deployment Health Assessment (PDHA)**

The PDHA (DD Form 2796; 23) is a self-report health screening measure implemented by the DoD in April 2003 (see Appendix B) and revised in 2008 (see Appendix C). All service members who are deployed outside of the continental US for at least 30 days are required to complete and submit a PDHA within 30 days of their return from each deployment. The PDHA was designed to collect information on the service member's current medical and mental health, psychosocial concerns, and deployment

experiences (e.g., combat and/or environmental exposure) for the purposes of assisting healthcare providers in identifying problems warranting clinical attention and/or referrals for additional evaluation and treatment. The original 2003 version of the PDHA (23) contains three pages of self-report items and one page to be completed by a healthcare provider, which included a brief six-item clinician-administered interview and a health assessment section where referral recommendations may be indicated. The first revised version of the PDHA, implemented in 2008 (23) was expanded to include five pages of self-report items with additional detail about experiences including combat exposure, substance use, and interpersonal difficulties. The clinician-administered section was also expanded to include additional detail on screening for health concerns such as alcohol problems, traumatic brain injury (TBI) risk, and environmental exposure.

***Primary Care PTSD Screen.*** The Primary Care PTSD Screen (PC-PTSD; 51) is a four-item self-report measure embedded in the PDHA that assesses the presence or absence of core PTSD symptoms including: 1) avoidance; 2) detachment; 3) hypervigilance; and 4) nightmares (See Appendix A). The PC-PTSD has been validated in U.S. service members returning from deployment. Specifically, a cutoff of two items endorsed out of four yielded high sensitivity (.91) and acceptable specificity (.72); when the cutoff was set at three items out of four, the measure yielded acceptable sensitivity (.78) and specificity increased to .87 (10). In the present study, a cutoff of three was used due to the comparatively higher positive predictive value that has been obtained across studies as compared to a cutoff of two (67).

***Patient Health Questionnaire-2.*** The Patient Health Questionnaire-2 (PHQ-2; 38) MDD screen is a two-item self-report measure that was adapted from the Primary

Care Evaluation of Mental Disorders (PRIME-MD; 70) and is embedded in the PDHA. The PHQ-2 items assess: 1) Depressed mood, “Feeling down, depressed, or hopeless”; and 2) Anhedonia, “Little interest or pleasure in doing things” (See Appendix A). A positive response to either question (i.e., 2003 PDHA: “A lot” with a total score of at least 2/4; 2008 PDHA: “More than half the days” or “Nearly every day” with a total score of at least 3/6) is considered a “positive” screen for depression warranting further clinical evaluation; these criteria have been applied in a previous similar study (47) and were applied to code positive responses in the present study. The PHQ-2 demonstrates an overall sensitivity of .84 and specificity of .72 (38).

### **Post-Deployment Health Reassessment (PDHRA)**

The PDHRA (DD Form 2900; 24) was implemented in 2005 (see Appendix D) and revised in 2008 (see Appendix E). Service members are expected to submit a PDHRA within the 90-180 day period post-deployment. The PDHRA is similar in format, length, and content to the PDHA. It is designed to identify symptoms and concerns that were not initially reported on the PDHA immediately following deployment. Research has consistently shown that service members tend to endorse psychiatric symptoms and behaviors more frequently on PDHRAs than PDHAs (47). Once completed, both the PDHA and PDHRA documents are entered as a permanent part of each service member’s medical record and they are stored in DMSS.

***Two Item Conjoint Screen (TICS).*** The Two-Item Conjoint Screen (TICS; 16) is a screening measure that contains two self-report questions assessing the presence or absence of perceived hazardous alcohol use. The TICS is embedded in both the 2005 and 2008 versions of the PDHRA and the two screening questions include: 1) “In the past

month, did you use alcohol more than you meant to?” and 2) “In the past month, have you felt that you wanted or needed to cut down on your drinking?” (See Appendix A). A positive, “yes” response to one or both TICS items is defined as a positive screen for alcohol misuse in military populations (62) and those same criteria were used to code positive responses in the present study. Further, the TICS has been validated with .81 sensitivity and .81 specificity in the general population (15).

## **HUMAN SUBJECTS PROTECTION**

This project involved an analysis of a subset of de-identified data collected as part of a larger scale study (Principal Investigator: Marjan Holloway, Ph.D.), which was approved by the Institutional Review Boards (IRBs) of the WRNMMC and the Uniformed Services University of the Health Sciences (USUHS, secondary concurrence). Support letters from the AFHSC were obtained to access DMSS data for the study samples and a Data Sharing Agreement (DSA) between USUHS and AFHSC was submitted and approved by the Department of Research Programs at WRNMMC. The study did not require informed consent given that it was based on the extraction of information from medical records and a population based surveillance database within the Department of Defense.

In accordance with AFHSC standard operating procedures, which were outlined in the approved DSA, all data transfer between USUHS and AFHSC was conducted using the “Safe Access File Exchange” (SAFE) system, which is an encrypted online file exchange website. The SAFE system is set up to allow only designated individuals to access the transferred files during a finite time period (i.e., two weeks), after which the file is expunged. These procedures were generated following consultation with the

USUHS IRB, the WRNMMC Department of Research Programs, and Dr. Angelia Eick-Cost, Special Studies Lead at AFHSC in order to ensure that all identifying information were removed prior to dissemination of the data via a secure encrypted transfer system to the research team at USUHS. The author of this thesis served as a collaborator on the larger scale study and contributed to the study's conceptualization, methodology, data collection, analysis, and interpretation. Furthermore, the USUHS Office of Sponsored Programs has received graduate student documentation for this study. A publication clearance request has been filed with WRNMMC.

#### **DATA ANALYTIC APPROACH**

The data analytic approach for this study is presented according to the Aims and Hypotheses outlined in the Background section.

**Aim 1.** To determine whether service members with and without an inpatient psychiatric history differ in their self-reported post-deployment hazardous alcohol use, as measured by the PDHRA Two-Item Conjoint Screen (TICS).

***Outcome variable.*** Perceived hazardous alcohol use, as measured by the PDHRA TICS (dichotomous variable; positive/negative)

***Predictor variable.*** History of inpatient psychiatric hospitalization (dichotomous variable; yes/no)

***Covariates.*** Age, sex, and service branch.

***Analyses.*** First, a Pearson Chi-Square analysis was conducted to determine if there were between-group differences in the number of service members with a positive TICS screen on the PDHRA. Then, in order to adjust for potential confounding due to covariates, a logistic regression model using the predictor variable, covariates, and

outcome variable described above was conducted. Given the paucity of scientific literature addressing the inpatient psychiatric military population, demographic and military service characteristics that could potentially confound study results were tested statistically using univariate logistic regression analyses with a conservative alpha-value cutoff ( $\alpha = .25$ ; 33). The variables tested included age, sex, race, marital status, service branch, component, rank (officer versus enlisted), and number of deployments. While the two samples were matched on age and sex, these variables were tested in univariate analyses to account for potential confounding effects of these characteristics (58).

Variables that significantly predicted PDHRA TICS score at  $p < .25$  (i.e., age, sex, marital status, service branch, and rank) were included as covariates in the multivariate model. Covariates that yielded a  $p < .1$  in the multivariate model were retained in the final model (i.e., age and sex) and excluded covariates were then assessed for confounding effects by examining changes in parameter estimates between the adjusted and unadjusted models (17). No confounding effects were observed for marital status and rank. Service branch was retained in the final model due to the implications of branch for alcohol use behaviors in the general military population (8, 49). The final model was conducted with age, sex, and branch entered in the first block of the model and predictor variables entered in the second block.

**Aim 2.** To examine the relationship between post-deployment PTSD and MDD screens (as measured by the PDHA) and subsequent self-reported hazardous alcohol use (as measured by the PDHRA TICS) among service members with and without an inpatient psychiatric history.

**Outcome variable.** Perceived hazardous alcohol use, as indicated by the PDHRA TICS (dichotomous; positive/negative)

**Predictor variables.** Hypothesis 2a and Hypothesis 2b: PDHA PTSD screen (dichotomous: positive/negative); PDHA MDD screen (dichotomous: positive/negative). Hypothesis 2c: Prior history of inpatient psychiatric hospitalization (dichotomous: yes/no); PDHA PTSD screen (dichotomous: positive/negative); PDHA MDD screen (dichotomous: positive/negative); Inpatient psychiatric history x PTSD interaction term; Inpatient psychiatric history x MDD interaction term.

**Covariates.** Age, sex, and branch.

**Analyses.** Chi-square analyses were conducted to determine if there were between-group differences in the PDHA PTSD and MDD screens. Logistic regression models using the predictor and outcome variables described above were used to determine if PDHA PTSD and MDD screens would predict PDHRA TICS screen outcome among service members with (Group 1) and without (Group 2) a history of inpatient psychiatric hospitalization (Hypotheses 2a and 2b). PDHA PTSD and MDD screens were each tested as moderators of the relationship between prior inpatient psychiatric history and PDHRA TICS screen with a logistic regression using the outcome and predictor variables listed above including interaction terms of inpatient psychiatric history and PDHA PTSD and MDD screens (Hypothesis 2c). Given the potential for the comorbidity of PTSD and MDD symptoms, the PDHA PTSD and MDD screen variables were evaluated for multicollinearity. Covariates for Aim 2 were selected and tested using the same procedures described for Aim 1. Study analyses were performed using IBM SPSS v.19.0 for Mac.



**Statistical Power.** Due to the retrospective design of this study and the fixed sample size, post-hoc power analyses were conducted using G\*Power 3.1.7. Observed power for study analyses is reported under the corresponding results for each hypothesis.

## **CHAPTER 4: RESULTS**

Of the 258 cases included in Group 1, approximately 4.7% ( $n = 12$ ) were missing data for either the predictor and/or outcome variables. Therefore, these 12 cases and 12 corresponding matched controls were omitted from the final study analyses following sensitivity analyses that confirmed that there were no statistically significant differences in demographic and military service characteristics with and without these cases included. In the final database used for study analyses, Groups 1 and 2 each consisted of 246 cases resulting in a total sample size of 492.

### **OVERALL SAMPLE CHARACTERISTICS**

The final sample ( $N = 492$ ) consisted of 100 (20%) females and 392 males (80%) with a mean age of 28.0 years ( $SD = 7.25$ ). Demographic and military service characteristics for both samples are presented in Table 1.

#### **Group 1 Characteristics**

The majority of Group 1 was comprised of Caucasian ( $n = 163$ , 67%), active duty ( $n = 206$ , 84%), enlisted ( $n = 217$ , 88%), U.S. Army ( $n = 201$ , 82%) service members. Approximately half of Group 1 cases were married ( $n = 124$ , 50%). Group 1 cases had a mean of 2.01 ( $SD = 1.17$ ) career deployments documented in DMSS, which included the deployment associated with the matched pair of PDHAs and PDHRAs analyzed in the present study.

Descriptive statistics for the index inpatient psychiatric hospitalization documented in DMSS for Group 1 are shown in Table 2. The four most frequent categories of psychiatric diagnoses were 1) adjustment disorder (n = 86, 35%), 2) mood disorders (n = 76, 31%), 3) substance use disorders including alcohol use disorders (n = 33, 13%) and 4) anxiety disorders including PTSD (n = 19, 8%). Taken together, the top four diagnostic categories accounted for 85% of the primary psychiatric diagnoses for the index cases. In addition to their primary diagnoses, most Group 1 cases (n = 133, 54%) were diagnosed with at least one formal comorbid psychiatric disorder. While 8 cases (3%) had PTSD as a primary diagnosis, a total of 20 (8%) cases in the sample were diagnosed with PTSD. Twenty cases (8%) had a primary diagnosis of alcohol abuse or dependence and 40 (16%) total cases had a documented AUD. Finally, in addition to the psychiatric diagnoses documented for each index case, 45 (18%) cases had documentation of suicidal behavior for the index hospitalization (i.e., ICD-9 Codes E950-959; 48).

Descriptive statistics for PDHA and PDHRA PTSD and MDD screens are shown in Table 3. In Group 1, 85 (35%) service members endorsed at least one symptom on the PDHA PTSD screen, out of which 26 (11%) screened positive with a score of at least three symptoms. Thirty-one (13%) service members endorsed at least one symptom on the PDHA MDD screen, which was considered a positive screen, with over 50% more service members endorsing both items as compared to a single item. On the PDHRA TICS alcohol screen, 22 (9%) service members screened positive for an AUD, with an equal split between service members who endorsed a single item (n = 11) and those who endorsed both items (n = 11).

### **Group 2 Characteristics**

The majority of Group 2 was also comprised of Caucasian ( $n = 162$ , 66%), active duty ( $n = 196$ , 80%), enlisted ( $n = 205$ , 84%), U.S. Army ( $n = 142$ , 58%) service members. Slightly less than half of Group 2 cases were married ( $n = 114$ , 46%). Group 2 cases had a mean of 2.16 ( $SD = 1.12$ ) deployments documented in DMSS, including the deployment associated with the matched pair of PDHAs and PDHRAs analyzed in the present study.

On the PDHA PTSD screen, 31 (13%) service members in Group 2 endorsed at least one symptom, out of which 10 (4%) screened positive with a score of at least three symptoms. Nine (4%) service members screened positive for MDD by endorsing at least one MDD symptom, with over three times as many Group 2 service members endorsing a single item ( $n = 7$ ) versus both items ( $n = 2$ ). On the PDHRA TICS alcohol screen, 10 (4%) service members screened positive for hazardous alcohol use, with an equal split between service members who endorsed a single item ( $n = 5$ ) and those who endorsed both items ( $n = 5$ ).

### **Observed Differences Between Groups**

Chi-square analyses revealed that the two groups were statistically comparable across all demographic and military service variables except service branch; Group 2 contained a disproportionately higher number of airmen and disproportionately lower number of soldiers as compared to Group 1,  $\chi^2(3, N = 492) = 34.03, p < .01, V = .26$  (see Table 1).

Chi-square analyses revealed significant between-group differences on all PDHA- and PDHRA-reported psychiatric screens examined in this study. Specifically, Group 1

cases were significantly more likely than Group 2 cases to have a positive PDHA PTSD screen,  $\chi^2(1, n = 492) = 7.67, p < .01, V = .13$ , a positive PDHA MDD screen  $\chi^2(1, n = 492) = 13.17, p < .001, V = .16$ , and a positive PDHRA TICS alcohol screen,  $\chi^2(1, n = 492) = 4.81, p < .05, V = .10$ . Observed power for chi-square analyses with  $N = 492$  and a small effect size (Cramer's  $V = .10$ ), was 0.6.

## **RESULTS FOR AIM 1**

Logistic regression analyses were run to test Hypothesis 1 that service members in Group 1 would be significantly more likely than Group 2 to screen positive on the PDHRA TICS alcohol screen. Results from the univariate analysis revealed that Group 1 cases were over twice as likely as Group 2 cases ( $OR = 2.32$ ) to have a positive PDHRA TICS alcohol screen,  $\chi^2(1, n = 492) = 4.93, p < .05$ . However, while the parameter estimates remained consistent as reflected by <15% change in the odds ratio ( $OR = 1.99$ ; 17) inpatient history was no longer a significant predictor of a positive PDHRA TICS alcohol screen after adjusting for age, sex, and branch in the multivariate model, approaching significance at  $p = .09$ . Post-hoc iterations of the adjusted multivariate model revealed that service branch was uniquely underlying the nonsignificant results obtained in the final model; adjusting for age and sex alone did not impact the original findings. Observed power for the adjusted model was sufficient (power = 0.97). Therefore, Hypothesis 1 was partially supported (see Table 4).

## **RESULTS FOR AIM 2**

To address Hypothesis 2a, that PDHA-reported PTSD and MDD screens would predict PDHRA TICS alcohol screen among Group 1 cases, a logistic regression analysis was conducted with a selection criterion of Group 1 only. Collinearity diagnostics for the

PDHA-reported PTSD and MDD screens revealed tolerance values greater than 0.1 and variance inflation factor (VIF) values less than 10 (26), indicating no violation of the multicollinearity assumption for the predictor variables. Results indicated that the PDHA PTSD screen was not a significant predictor of the PDHRA TICS alcohol screen among Group 1 cases. The PDHA MDD screen approached significance ( $p = .07$ ) as a unique predictor of the PDHRA TICS alcohol screen such that Group 1 cases with a positive MDD screen were nearly three times ( $OR = 2.88$ ) as likely as cases with a negative MDD screen to have a positive TICS alcohol screen. However after adjusting for age, sex, and branch, neither the PDHA PTSD nor MDD screen distinguished between Group 1 cases that did and did not screen positive on the PDHRA TICS alcohol screen. Observed power in the adjusted model was sufficient (power = 0.96). Therefore, Hypothesis 2a was not supported (see Table 5).

To address Hypothesis 2b that PDHA PTSD and MDD screens would predict PDHRA TICS alcohol screen among Group 2 cases, the analyses for Hypothesis 2a were duplicated with a selection criterion of Group 2 cases. Results revealed that neither PDHA PTSD nor MDD screens uniquely predicted a positive PDHRA TICS alcohol screen among Group 2 cases. Observed power was sufficient (power = 0.81). Therefore, Hypothesis 2b was not supported (see Table 6).

To address Hypothesis 2c in order to determine if an interaction existed between inpatient psychiatric history and the PDHA PTSD and MDD screens, a logistic regression model was conducted with the following predictor variables: inpatient psychiatric history (i.e., Group 1 versus Group 2), PDHA PTSD screen, PDHA MDD screen, an inpatient psychiatric history x PTSD interaction term, and an inpatient psychiatric history x MDD

interaction term. Results indicated that the overall model did not distinguish between cases that did and did not screen positive on the PDHRA TICS,  $\chi^2(5) = 10.18, p = .07$  (ns). Further, inpatient history (i.e., Group 1 vs Group 2) remained the only unique predictor of PDHRA TICS alcohol screen, indicating that there was no moderation effect of the PDHA PTSD or MDD screens on the relationship between inpatient psychiatric history and PDHRA TICS alcohol screen. Observed power was sufficient for all predictors (power = 0.98) except the inpatient psychiatric history x MDD interaction term, which revealed power = 0.15. When the models for each interaction were run separately, comparable results were obtained such that the inpatient psychiatric history x MDD interaction term was still markedly underpowered (power = 0.47). Therefore, Hypothesis 2c was not supported (see Table 7).

## **CHAPTER 5: DISCUSSION**

### **SUMMARY AND INTERPRETATION OF STUDY FINDINGS**

Using a retrospective cohort design, previously psychiatrically hospitalized service members were compared to an age and sex matched control sample of service members with no prior psychiatric history on post-deployment screening measures for PTSD, MDD, and AUDs. Overall, the sample of index cases was representative of the typical demographic characteristics of service members admitted for psychiatric hospitalization such that the sample was predominately young, Caucasian, and enlisted with a slightly lower proportion of males to females than the general military population (4, 12). Further, the top four primary diagnoses for this sample matched the leading diagnoses reported by AFHSC (4) for all service members admitted for inpatient psychiatric hospitalization. In addition to being matched on age and sex, the prior

inpatient sample was statistically comparable to the control sample on characteristics including race/ethnicity, marital status, component, rank, and number of deployments. However, the two samples differed significantly on service branch such that the control sample was comprised of a disproportionately high number of airmen and low number of soldiers than the prior inpatient sample.

Study findings revealed that service members with a prior history of inpatient psychiatric hospitalization were approximately twice as likely than service members without such a history to screen positive for an AUD on the PDHRA TICS. However, these findings no longer reached significance in the adjusted models, which was determined to be due to the effect of service branch. These findings partially confirmed the hypothesized association between an inpatient psychiatric history and self-reported hazardous alcohol use on the PDHRA. This observed association aligns with previous empirical findings in military populations reporting the relationship between psychiatric symptoms/disorders and increased likelihood of self-reported hazardous alcohol use (28, 44, 66). However, it remains unknown whether this association would be observed in samples matched on service branch. Previous research has shown a discrepancy between the branches with regard to AUDs such that the Army and Marine Corps report the highest rates of AUDs and the Air Force reports the lowest (49). Ultimately, these findings highlight this clinical population as potentially more vulnerable to AUDs as compared to the general military population, although further research within individual service branches is needed to fully address that question.

Based on the literature supporting the relationship between post-deployment psychiatric symptoms and hazardous alcohol use in nonclinical military samples, it was

hypothesized that this relationship would be observed in both a nonclinical and a known clinical sample of service members in the present study. Further, given that post-deployment psychiatric symptoms would indicate distress and/or the impact of a significant stressor that occurred after discharge from the index psychiatric hospitalization, an exploratory hypothesis stated that PDHA PTSD and MDD screens would enhance (i.e., moderate) the relationship between a prior inpatient psychiatric history and post-deployment hazardous alcohol use. However, in contrast to the predominant findings in the empirical literature, the hypothesized association between post-deployment PTSD and MDD screens and the PDHRA TICS alcohol screen was not observed in this study.

Between groups, a significantly greater number of service members in the prior inpatient sample screened positive for PTSD and MDD on their PDHAs, which reflects a higher rate of these psychiatric symptoms following deployment in a known clinical population. Yet, neither screen in the early post-deployment period significantly predicted a subsequent positive PDHRA TICS alcohol screen in either group. Additionally, a positive PDHA PTSD or MDD screen did not strengthen the relationship between a prior inpatient psychiatric hospitalization history and subsequent PDHRA TICS alcohol screen outcome, which suggests that that relationship is potentially influenced by different factors. Alternatively, methodological factors such as composition of the sample (e.g., differences in service branch) and lack of anonymity for the self-report PDHA and PDHRA data may also be underlying the discrepancy between the present findings and the existing literature. Ultimately, this study does not provide conclusive support for the temporal-ordering and self-medication models that have been



proposed to explain the etiology of comorbid disorders in dual diagnosis patients (18, 19).

These findings were surprising given the robust body of literature documenting the prevalence and co-occurrence of PTSD, MDD, and AUD symptoms among U.S. service members returning from deployment and the known predisposition for psychiatric morbidity among the prior inpatient cases. However, there are several relevant factors that may have impacted the study findings and warrant attention. First, although twice as many prior inpatient cases than controls reported hazardous alcohol use on the PDHRA (8.9% versus 4.1%), which was consistent with the expected relationship, the overall rate of endorsing the PDHRA TICS items is markedly lower than the rates reported in the scientific literature (47, 67). Overall, there is a wide variation in the literature of the reported prevalence of hazardous alcohol use in U.S. service members, ranging from 12% (47) to 70% (52), with the most consistent figures ranging between 20-30% (11, 13, 49). These figures vary widely by demographic and military-related variables such as age, sex, grade, and service branch, and also by method of data collection.

When data are collected anonymously (62, 75), the percentage of service members who endorse hazardous alcohol use is approximately two to three times higher than when data are not anonymous. Given the potential for serious occupational and/or legal consequences associated with engaging in hazardous alcohol use in the U.S. military (49), this pattern is understandable. However, while estimates for the current study were determined conservatively based on a widely-known study with similar methods (47) the prevalence of a positive TICS screen in the current study (6% of the combined samples) was still substantially lower than expected, which highlights the

likely impact of under-reporting on study findings. Further, Milliken and colleagues (47) conducted their study in an exclusively Army sample, which may also have contributed to comparatively lower rates of self-reported hazardous alcohol use in the present study where all service branches were represented.

Second, while PTSD and MDD symptoms alone may not carry the same legal implications for service members as AUDs, there is still a higher likelihood of premature separation following either diagnosis and additional barriers to care such as stigma and a delayed return home if service members endorse these symptoms following deployment (30); these barriers likely contribute to the under-reporting of symptoms on non-anonymous assessments such as the PDHA and PDHRA, which are entered into each service member's medical record.

Despite the fact that the majority of the study hypotheses were not confirmed, this study's negative findings carry meaningful implications for the effectiveness of the PDHA and PDHRA as post-deployment screening tools. The individual screening measures embedded in the PDHA and PDHRA (i.e., the PHQ-2, the PC-PTSD, and the TICS) have established psychometric properties. However, those properties have not been assessed in this specific population under similar reporting conditions, which raises the question of whether these screening measures are similarly valid and reliable in this context and necessitates cautious interpretation. Further, these findings raise the question of whether these assessments, when administered in isolation, are adequate tools to accurately screen for post-deployment psychiatric symptoms and behaviors if the differences between a known inpatient clinical sample and a nonclinical sample are so difficult to detect.

In a recent study, Skopp and colleagues (67) examined the diagnostic efficiency of the PHQ-2, PC-PTSD, and the TICS as they appear on the PDHRA and obtained prevalence rates for positive screens that were consistent with previous similar studies (47, 75). The authors found that all three measures demonstrated robust negative predictive value and adequate specificity, but weaker sensitivity and very weak positive predictive value. The authors noted that their findings of a low prevalence of positive PTSD, MDD, and AUD screens are consistent with the “healthy warrior effect,” which identifies service members as an overall healthier subset of the U.S. population. However, in the present study, that interpretation is not a strong explanation for low prevalence positive screens in the prior inpatient sample. Given that 20% of the prior inpatient cases had previously been diagnosed with PTSD, 37% were diagnosed with a mood disorder, and 16% were diagnosed with an AUD, the PDHA and PDHRA findings observed in the present study should be interpreted with caution. The clinical implications of these findings are described in further detail below.

## **LIMITATIONS**

The findings of this study must be considered in the context of several limitations. First, the study was conducted using a retrospective dataset with a fixed sample size and self-report measures to assess post-deployment PTSD, MDD, and AUD symptoms. The observed prevalence of PDHA and PDHRA-reported symptoms was lower than expected, which raises the question of whether underreporting was occurring, these service members did not perceive their drinking to be hazardous, or these service members were not drinking excessively.

Second, given the study inclusion criteria for a deployment following discharge with a matched PDHA and PDHRA, the sample of prior inpatient cases represents a small subset of the former WRAMC inpatient psychiatric population, which limits the generalizability of study findings to the military inpatient psychiatric population as a whole. Given that these service members were returned to duty and deployed, it is reasonable to assume that the severity of their disorders was comparatively lower and their prognosis comparatively better than service members who did not return to duty and deploy after discharge. Despite this limitation, the sample was comparable in terms of demographic and military service characteristics as well as primary diagnosis to the general inpatient psychiatric population in the military. Further, it is also safe to assume based on study findings that these service members were more psychiatrically troubled following deployment than controls.

A third limitation was the reliance on a matched pair of PDHA and PDHRA assessments that were completed following the discharge date of the index psychiatric hospitalization due to the possibility that the service member may have had an earlier deployment that occurred following discharge. This limitation was partially addressed by assessing for the potential confounding effects of number of previous deployments, for which no significant effects were found. However, interpretation of study findings continues to be limited by the potential that service members' reported symptoms could change over time.

## **STRENGTHS**

Despite its limitations, this study is characterized by several unique strengths. This is the first study examining post-deployment psychiatric outcome for service

members with a prior inpatient psychiatric hospitalization. Despite the fact that PDHAs were implemented a decade ago in 2003 with PDHRAs being added in 2005 with a primary objective of screening service members for psychiatric disorders among other illnesses and injuries, there have been no studies examining how service members with an established inpatient psychiatric history compare on these measures to the general population of service members who deploy. The present study is also the first to compare service members with an inpatient psychiatric history to a sample with no prior psychiatric history on self-reported hazardous alcohol use, which is a prevalent behavior across the entire military that carries the potential for significant negative consequences.

Another strength of this study is the longitudinal analysis of symptoms at the time of redeployment back from theater and again months later during the reintegration process. By matching each individual service member's PDHA to the PDHRA that they completed for the same deployment, we were able to conduct analyses examining the relationship between PTSD and MDD symptoms reported at an initial time point on the PDHA and behaviors reported at a later time point on the PDHRA. Despite the inconclusive findings of the present study, this design allowed us to test hypotheses that were generated based on established theoretical models of psychiatric symptoms and hazardous alcohol use that would not have been possible if we had analyzed data collected at a single time point.

#### **CLINICAL IMPLICATIONS AND FUTURE DIRECTIONS**

While there are limited conclusions that can be drawn from the results of the current study, the findings carry implications for ongoing clinical research and treatment in military populations. First, service members with a prior history of inpatient

hospitalization endorsed significantly more post-deployment psychiatric symptoms and hazardous alcohol use behaviors than service members with no such history. Therefore, it is prudent to ensure that service members with a known psychiatric history are appropriately monitored, both before and after deployment, and referred for treatment when necessary to avoid deleterious consequences, especially in light of established barriers to care following deployment (30, 31, 47). Further, this finding highlights the importance of bolstering protective factors and prophylactic measures to help prevent service members from reaching a point of crisis or level of distress that necessitates an initial inpatient psychiatric hospitalization.

Second, PTSD has acquired a substantial amount of attention in both the mainstream media and the scientific literature as one of the most salient psychiatric disorders associated with deployment during the OEF/OIF era, which is understandable given the potential for exposure to combat or other traumatic events in deployed settings. However MDD should not be overlooked as a significant problem that deployed service members may experience during or after deployment, especially if they have a documented prior psychiatric history that necessitated inpatient hospitalization. While neither PTSD symptoms nor MDD symptoms significantly predicted hazardous alcohol use in the present study, only MDD symptoms approached significance in the prior inpatient sample. While it is not possible to speculate based on these findings whether data collected from an anonymous measure would have revealed MDD as a unique predictor of subsequent hazardous alcohol use and/or a more significant problem than PTSD in deployed service members with an inpatient psychiatric history, it is appropriate

to recommend that individuals with a known inpatient psychiatric history are assessed thoroughly for both disorders.

The low rates of self-reported hazardous drinking in this study lend support for the development and implementation of empirically-supported methods of anonymous screening and treatment for mental health and/or alcohol use concerns in U.S. service members, which has been previously recommended as means to address AUDs in the military (49). Preliminary findings indicate that participants in a confidential alcohol treatment program experienced fewer barriers to seeking treatment in military settings, including stigma (27), although additional research on feasibility and efficacy of such programs is still needed. Additionally, further development and implementation of treatment programs that offer amnesty to service members who might otherwise be involuntarily separated following alcohol-related conduct or legal problems may also address current barriers to care.

While further research is needed, this study suggests that the PDHA and PDHRA may not be sufficient when administered as the only screening measure following deployment for service members with a history of inpatient psychiatric hospitalization. While it is possible that the service members in Group 1 achieved and maintained remission throughout their deployment and reintegration and were in fact comparable to Group 2, they still carry multiple significant risk factors for serious negative outcomes that justify a conservative clinical approach. As a prime example, in a recent study Luxton and colleagues (41) found that service members with an inpatient psychiatric history are five times more likely than the general military population to die by suicide. Therefore, establishing and maintaining a safety plan that incorporates the anticipated

stressors of continued military service would be appropriate for all service members who are expected to return to duty.

Given the clinical implications of these study findings, it is important to acknowledge the necessity of balancing the potentially competing goals of thoroughness and efficiency when evaluating how post-deployment assessments are conducted because significantly increasing the number of psychiatric referrals following deployment would further compromise the availability and quality of care for service members who truly need it. Further research is needed to identify the unique psychiatric characteristics and treatment needs for service members who return to duty following an inpatient psychiatric hospitalization.

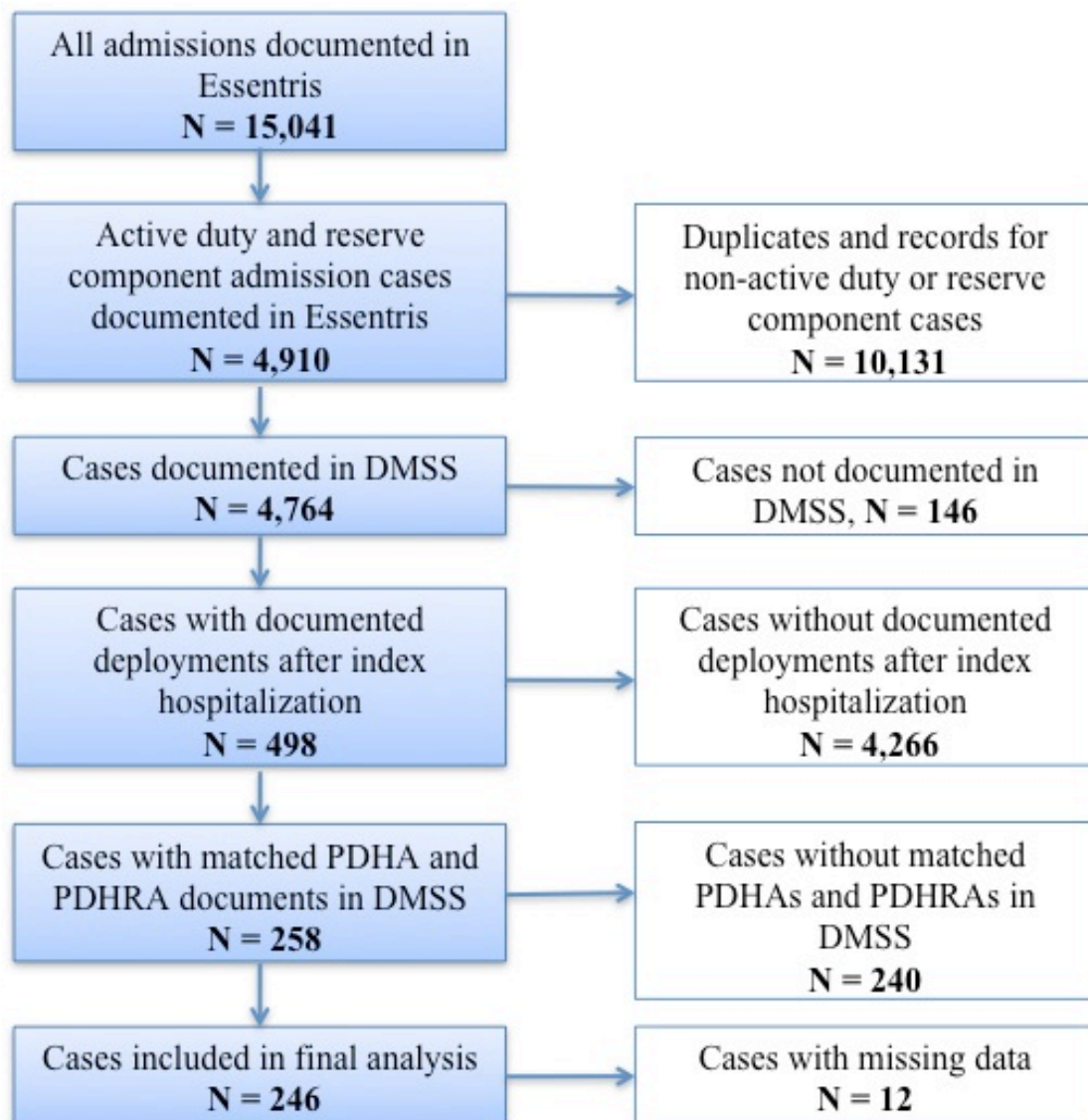
#### **FUTURE DIRECTIONS**

The present study is one of a limited number of studies examining the long-term impact of being admitted for inpatient psychiatric care in the U.S. military. Consequently, there are many important research questions pertaining to psychiatric and occupational outcomes that warrant attention in this population. Planned future directions will address two broad objectives that expand on the current study. First, the sample examined in this study represented a small subset of the population of U.S. service members with a history of inpatient psychiatric hospitalization. Future research will include an expansion of the current sample to include all active duty, reserve, and guard component service members admitted to the former WRAMC between 2001-2010 in order to conduct a more comprehensive study of the characteristics and longitudinal outcomes in this unique clinical population using survival analyses to account for time-dependent variables. Further, in addition to the control group with no psychiatric history,



a second control group comprised of service members with only a prior *outpatient* psychiatric history will be added to help determine what, if any, unique implications inpatient psychiatric hospitalization has for a service member when compared to a less acute clinical sample. The second major objective for future research will entail adding objective outcome variables that were not derived from self-report measures (i.e., rehospitalization and separation from military service) in order to address the limitations of the current study that were potentially driven by under-reporting. Ultimately, continued research that will advance our understanding of this growing, vulnerable subset of the military population is paramount in order to address these service members' clinical needs, prevent premature attrition, and preserve overall force readiness.

**Figure 1.** Identification of Group 1 cases based on WRAMC psychiatric admission dates of 2001-2010.



**Table 1.** Descriptive statistics for Group 1 with an inpatient psychiatric history (N = 246) and Group 2 with no inpatient psychiatric history (N = 246)

	Group 1		Group 2			
Characteristics	<i>N</i>	%	<i>N</i>	%	$\chi^2$	<i>p</i> <sup>a</sup>
<b>Demographic</b>						
Race/Ethnicity					6.23	.29
Caucasian	163	67	162	66		
African-American	48	20	52	21		
Hispanic	20	8	20	8		
Asian/Pacific Islander	10	4	4	2		
Other	3	1	5	2		
Data Missing	2	<1	3	1		
Marital Status					.85	.65
Married	124	50	114	46		
Single	111	45	121	49		
Other	11	5	11	5		
<b>Military Service</b>						
Rank					3.65	.30 <sup>b</sup>
E1 – E4	137	56	125	51		
E5 – E9	80	32	80	33		
O1 – O5	26	11	33	13		
Warrant	3	1	8	3		
Service Branch					34.03	<.01
Army	201	82	142	58		
Navy	8	3	17	7		
Air Force	28	11	60	24		
Marine Corps	9	4	27	11		
Component					1.43	.49
Active	206	84	196	80		
Reserve	11	4	15	6		
National Guard	29	12	35	14		
Total No. Deployments					6.84	.08
1	79	32	103	42		
2	82	33	80	33		
3	53	22	35	14		
≥4	28	11	28	11		
Data Missing	4	2	-	-		

**Note.** Groups were matched on age and sex.

<sup>a</sup> Chi-square or Fisher's exact tests (for analyses in which the expected count was less than 5 in 20% of cells); <sup>b</sup> Fisher's exact test

**Table 2.** Documented psychiatric diagnoses for Group 1 (N = 246)

Diagnosis	Primary Psychiatric Diagnosis		Any Psychiatric Diagnosis	
	N	%	N	%
<b>Axis I Disorders</b>				
Adjustment Disorder	86	35	90	37
Mood Disorders				
Depressive Disorder	62	25	74	30
Dysthymic Disorder	6	2	8	3
Bipolar Disorder	6	2	7	3
Other Mood Disorder	2	1	3	1
Substance Use Disorders				
Alcohol Use Disorder	20	8	40	16
Other Substance Use Disorder	13	5	57	23
Anxiety Disorders				
Posttraumatic Stress Disorder	8	3	20	8
Other Anxiety Disorder	11	4	27	11
Psychotic Disorder	12	5	12	5
Other Axis I Disorder	6	2	10	4
<b>Axis II Disorder</b>	6	2	35	14
<b>Other Primary Diagnosis</b>	5	2	-	-
<b>Missing Diagnosis</b>	3	1	-	-
<b>Suicide-related ICD Code</b>	-	-	45	18

**Table 3.** PDHA PTSD and MDD screen and PDHRA TICS alcohol screen results among inpatient (Group 1; N=246) and control (Group 2; N=246) cases.

		Group 1		Group 2			
		<i>N</i>	%	<i>N</i>	%	$\chi^2$	<i>p</i>
Primary Care-PTSD Screen							
No. positive responses							
	1	20	8.1	14	5.6		
	2	19	7.7	7	2.8		
	3	9	3.7	5	2.0		
	4	17	6.9	5	2.0		
	<b>Positive Screen (≥3)</b>	<b>26</b>	<b>10.6</b>	<b>10</b>	<b>4.1</b>	<b>7.67</b>	<b>&lt;.01</b>
PHQ-2 Depression Screen							
No. positive responses							
	1	12	4.9	7	2.8		
	2	19	7.7	2	0.8		
	<b>Positive Screen (≥1)</b>	<b>31</b>	<b>12.6</b>	<b>9</b>	<b>3.7</b>	<b>13.17</b>	<b>&lt;.001</b>
Two-Item Conjoint Screen (Alcohol)							
No. positive responses							
	1	11	4.5	5	2.0		
	2	11	4.5	5	2.0		
	<b>Positive Screen (≥1)</b>	<b>22</b>	<b>8.9</b>	<b>10</b>	<b>4.1</b>	<b>4.81</b>	<b>&lt;.05</b>

**Table 4.** Summary of unadjusted<sup>a</sup> and adjusted<sup>b</sup> logistic regression models predicting positive Two-Item Conjoint Screen (TICS) from history of inpatient psychiatric hospitalization (N = 492)

Variable <sup>a</sup>	<i>B</i>	<i>SE</i>	<i>OR</i>	95% CI	Wald Statistic	<i>p</i>
Inpatient History	0.84	0.39	2.32	[1.07, 5.00]	4.58	<.05
Model $\chi^2(1) = 4.93, p < .05$						
Variable <sup>b</sup>	<i>B</i>	<i>SE</i>	<i>OR</i>	95% CI	Wald Statistic	<i>p</i>
Inpatient History	0.69	0.41	1.99	[0.89, 4.44]	2.84	.09
Age	-0.08	0.03	0.92	[0.86, 0.98]	6.97	<.05
Sex	1.03	0.63	2.80	[0.82, 9.53]	2.72	.09
Service Branch	0.75	0.52	2.12	[0.77, 5.83]	2.10	.15
Model $\chi^2(4) = 18.05, p < .001$						

**Table 5.** Summary of unadjusted<sup>a</sup> and adjusted<sup>b</sup> logistic regression models predicting positive Two-Item Conjoint Screen (TICS) in inpatient cases (Group 1; N = 246)

Variable <sup>a</sup>	<i>B</i>	<i>SE</i>	<i>OR</i>	95% CI	Wald Statistic	<i>p</i>
PTSD Screen	-1.36	1.08	0.26	[0.03, 2.14]	1.58	.21
MDD Screen	1.06	0.57	2.88	[0.94, 8.86]	3.40	.07

Model  $\chi^2(2) = 4.11, p = .13$

Variable <sup>b</sup>	<i>B</i>	<i>SE</i>	<i>OR</i>	95% CI	Wald Statistic	<i>p</i>
PTSD Screen	-1.39	1.10	0.25	[0.03, 2.14]	1.61	.21
MDD Screen	0.95	0.59	2.58	[0.82, 8.14]	2.61	.11
Age	-0.05	0.04	0.96	[0.20, 0.96]	1.64	.20
Sex	0.97	0.77	2.62	[0.58, 11.85]	1.57	.19
Service Branch	0.43	0.66	1.54	[0.42, 5.61]	0.42	.52

Model  $\chi^2(5) = 8.19, p = .15$

**Table 6.** Summary of logistic regression model predicting positive Two-Item Conjoint Screen (TICS) in control cases (Group 2; N = 246)

Variable	<i>B</i>	<i>SE</i>	<i>OR</i>	95% CI	Wald Statistic	<i>p</i>
PTSD Screen	0.72	1.22	2.07	[0.19, 22.74]	0.35	.55
MDD Screen	0.89	1.23	2.44	[0.22, 27.10]	0.53	.47

Model  $\chi^2(2) = 1.15, p = .56$



**Table 7.** Summary of logistic regression model testing moderation of inpatient psychiatric history and TICS score by PTSD and Depression screens (N = 492)

Variable	<i>B</i>	<i>SE</i>	<i>OR</i>	95% CI	Wald Statistic	<i>p</i>
History	0.87	0.43	2.38	[1.03, 5.53]	4.07	<.05
PTSD Screen	0.73	1.22	2.07	[0.19, 22.74]	0.35	.55
MDD Screen	0.89	1.23	2.44	[0.22, 27.01]	0.53	.47
History x PTSD	-2.08	1.63	0.13	[0.01, 3.05]	1.63	.20
History x Depression	0.16	1.36	1.18	[0.08, 16.76]	0.02	.90

Model  $\chi^2(5) = 10.18, p = .07$

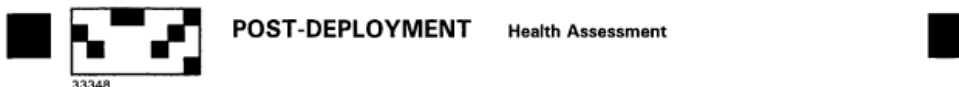
## APPENDIX A: VARIABLES PROVIDED BY AFHSC

Item Description	Categorical Item Anchors
<b>Demographics</b>	
Sex	Male, Female
Age*	
Marital Status	Married, Single, Other
Service Branch	Army, Navy, Air Force, Marine Corps
Component	Active Duty, Reserve, National Guard
Grade	E1-E4, E5-E-9, O1-O5, Warrant
Date entered the military*	
Date left military*	
Race	Caucasian, African American, Hispanic, Asian/Pacific Islander, Other
<b>Deployment Roster Information</b>	
Start date of deployment(s)*	
End date of deployment(s)*	
Operation code for deployment	OIF/OND, OEF, Other
<b><u>PDHA DD2796, 2003 and 2008 versions</u></b>	
Date of completion*	
Date of arrival in theater*	
Date of departure from theater*	
(2003 ONLY) PHQ-2 Depression Screen Over the last two weeks, how often have you been bothered by the following problems? a. Little interest or pleasure in doing things. b. Feeling down, depressed or hopeless.	All item anchors were:  None (0) Some (1) A lot (2)
(2008 ONLY) PHQ-2 Depression Screen Over the past month, have you been bothered by the following problems? c. Little interest or pleasure in doing things. d. Feeling down, depressed or hopeless.	All item anchors were:  Not at all (0) Few or several days (1) More than half the days (2) Nearly every day (3)

<p><b>Primary Care PTSD Screen (PC-PTSD)</b>  Have you ever had any experience that was so frightening, horrible, or upsetting that in the past month you:</p> <ul style="list-style-type: none"> <li>a. Have had nightmares about it or thought about it when you did not want to?</li> <li>b. Tried hard not to think about it or went out of your way to avoid situations that remind you of it?</li> <li>c. Were constantly on guard, watchful, or easily startled?</li> <li>d. Felt numb or detached from others, activities, or your surroundings?</li> </ul>	<p>All item anchors were:</p> <p>Yes No</p>
<p><b>PDHRA DD2900, 2005 and 2008 versions</b></p>	
<p>Date of completion*</p> <p>Date of arrival in theater*</p> <p>Date of departure from theater*</p> <p>Two Item Conjoint Screen (TICS) for Alcohol</p> <ul style="list-style-type: none"> <li>a. In the past month, did you use alcohol more than you meant to?</li> <li>b. In the past month, have you felt that you wanted to or needed to cut down on your drinking?</li> </ul>	<p>Both item anchors were:</p> <p>Yes No</p>
<p><b>Health Care Encounters</b></p>	
<p>For each Inpatient Psychiatric Admission:</p> <ul style="list-style-type: none"> <li>1. Admission and discharge dates*</li> <li>2. ICD codes: Mental Disorders (290-319)</li> <li>3. ICD codes: Suicide and Self-inflicted injury (E950-959)</li> </ul>	

\*All time-dependent variables were calculated by AFHSC in relation to the reference date (i.e., "Day 0") such that positive values reflected number of days an event occurred after Day 0 and negative values reflected number of days an event occurred before Day 0.

# APPENDIX B: DD 2796 POST-DEPLOYMENT HEALTH ASSESSMENT, 2003 VERSION



Authority: 10 U.S.C. 136 Chapter 55. 1074f, 3013, 5013, 8013 and E.O. 9397

Principal Purpose: To assess your state of health after deployment outside the United States in support of military operations and to assist military healthcare providers in identifying and providing present and future medical care to you.

Routine Use: To other Federal and State agencies and civilian healthcare providers, as necessary, in order to provide necessary medical care and treatment.

Disclosure: (Military personnel and DoD civilian Employees Only) Voluntary. If not provided, healthcare WILL BE furnished, but comprehensive care may not be possible.

INSTRUCTIONS: Please read each question completely and carefully before marking your selections. Provide a response for each question. If you do not understand a question, ask the administrator.

Demographics			
Last Name		Today's Date (dd/mm/yyyy)	
<input type="text"/>		<input type="text"/>	
First Name		Social Security Number	
<input type="text"/>		<input type="text"/>	
Name of Your Unit or Ship during this Deployment		DOB (dd/mm/yyyy)	
<input type="text"/>		<input type="text"/>	
Gender	Service Branch	Component	Date of arrival in theater (dd/mm/yyyy)
<input type="radio"/> Male	<input type="radio"/> Air Force	<input type="radio"/> Active Duty	<input type="text"/>
<input type="radio"/> Female	<input type="radio"/> Army	<input type="radio"/> National Guard	<input type="text"/>
	<input type="radio"/> Coast Guard	<input type="radio"/> Reserves	Date of departure from theater (dd/mm/yyyy)
	<input type="radio"/> Marine Corps	<input type="radio"/> Civilian Government Employee	<input type="text"/>
	<input type="radio"/> Navy		
	<input type="radio"/> Other		
Location of Operation		Pay Grade	
<input type="radio"/> Europe	<input type="radio"/> Australia	<input type="radio"/> E1	<input type="radio"/> W1
<input type="radio"/> SW Asia	<input type="radio"/> Africa	<input type="radio"/> E2	<input type="radio"/> W2
<input type="radio"/> SE Asia	<input type="radio"/> Central America	<input type="radio"/> E3	<input type="radio"/> W3
<input type="radio"/> Asia (Other)	<input type="radio"/> Unknown	<input type="radio"/> E4	<input type="radio"/> W4
		<input type="radio"/> E5	<input type="radio"/> W5
		<input type="radio"/> E6	<input type="radio"/> W6
		<input type="radio"/> E7	<input type="radio"/> W7
		<input type="radio"/> E8	<input type="radio"/> W8
		<input type="radio"/> E9	<input type="radio"/> W9
		<input type="radio"/> O10	
To what areas were you mainly deployed: (mark all that apply - list where/date arrived)			
<input type="radio"/> Kuwait	<input type="radio"/> Iraq		
<input type="radio"/> Qatar	<input type="radio"/> Turkey		
<input type="radio"/> Afghanistan	<input type="radio"/> Uzbekistan		
<input type="radio"/> Bosnia	<input type="radio"/> Kosovo		
<input type="radio"/> On a ship	<input type="radio"/> CONUS		
	<input type="radio"/> Other		
Name of Operation:			
<input type="text"/>			
Occupational specialty during this deployment (MOS, NEC or AFSC)			
<input type="text"/>			
Combat specialty:			
<input type="text"/>			

Administrator Use Only		
Indicate the status of each of the following:		
Yes	No	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please answer all questions in relation to THIS deployment

1. Did your health change during this deployment?

- ☐ Health stayed about the same or got better  
☐ Health got worse

2. How many times were you seen in sick call during this deployment?

--	--

No. of times

3. Did you have to spend one or more nights in a hospital as a patient during this deployment?

- ☐ No  
☐ Yes, reason/dates: \_\_\_\_\_

4. Did you receive any vaccinations just before or during this deployment?

- ☐ Smallpox (leaves a scar on the arm)  
☐ Anthrax  
☐ Botulism  
☐ Typhoid  
☐ Meningococcal  
☐ Other, list: \_\_\_\_\_  
☐ Don't know  
☐ None

5. Did you take any of the following medications during this deployment?

- (mark all that apply)  
☐ PB (pyridostigmine bromide) nerve agent pill  
☐ Mark 1 antidote kit  
☐ Anti-malaria pills  
☐ Pills to stay awake, such as dexedrine  
☐ Other, please list \_\_\_\_\_  
☐ Don't know

6. Do you have any of these symptoms now or did you develop them anytime during this deployment?

No	Yes During	Yes Now		No	Yes During	Yes Now
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Chronic cough	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Chest pain or pressure
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Runny nose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Dizziness, fainting, light headedness
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Fever	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Difficulty breathing
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Weakness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Still feeling tired after sleeping
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Headaches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Difficulty remembering
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Swollen, stiff or painful joints	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Diarrhea
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Back pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Frequent indigestion
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Muscle aches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Vomiting
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Numbness or tingling in hands or feet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Ringing of the ears
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Skin diseases or rashes			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Redness of eyes with tearing			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> Dimming of vision, like the lights were going out			

7. Did you see anyone wounded, killed or dead during this deployment?

- (mark all that apply)  
☐ No ☐ Yes - coalition ☐ Yes - enemy ☐ Yes - civilian

10. Are you currently interested in receiving help for a stress, emotional, alcohol or family problem?

- ☐ No ☐ Yes

8. Were you engaged in direct combat where you discharged your weapon?

- ☐ No ☐ Yes ( ☐ land ☐ sea ☐ air )

11. Over the LAST 2 WEEKS, how often have you been bothered by any of the following problems?

None	Some	A Lot	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Little interest or pleasure in doing things
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Feeling down, depressed, or hopeless
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Thoughts that you would be better off dead or hurting yourself in some way

9. During this deployment, did you ever feel that you were in great danger of being killed?

- ☐ No ☐ Yes

DD FORM 2796, APR 2003



12. Have you ever had any experience that was so frightening, horrible, or upsetting that, IN THE PAST MONTH, you ....

No      Yes

- ☐ ☐ Have had any nightmares about it or thought about it when you did not want to?
- ☐ ☐ Tried hard not to think about it or went out of your way to avoid situations that remind you of it?
- ☐ ☐ Were constantly on guard, watchful, or easily startled?
- ☐ ☐ Felt numb or detached from others, activities, or your surroundings?

15. On how many days did you wear your MOPP over garments?

--	--

No. of days

16. How many times did you put on your gas mask because of alerts and NOT because of exercises?

--	--

No. of times

17. Were you in or did you enter or closely inspect any destroyed military vehicles?

☐ No      ☐ Yes

13. Are you having thoughts or concerns that ...

No      Yes      Unsure

- ☐ ☐ ☐ You may have serious conflicts with your spouse, family members, or close friends?
- ☐ ☐ ☐ You might hurt or lose control with someone?

18. Do you think you were exposed to any chemical, biological, or radiological warfare agents during this deployment?

☐ No      ☐ Don't know  
☐ Yes, explain with date and location

14. While you were deployed, were you exposed to:  
 (mark all that apply)

No      Sometimes      Often

- |                       |                       |                       |                                              |
|-----------------------|-----------------------|-----------------------|----------------------------------------------|
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | DEET insect repellent applied to skin        |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Pesticide-treated uniforms                   |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Environmental pesticides (like area fogging) |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Flea or tick collars                         |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Pesticide strips                             |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Smoke from oil fires                         |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Smoke from burning trash or feces            |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Vehicle or truck exhaust fumes               |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Tent heater smoke                            |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | JP8 or other fuels                           |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Fog oils (smoke screen)                      |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Solvents                                     |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Paints                                       |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Ionizing radiation                           |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Radar/microwaves                             |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Lasers                                       |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Loud noises                                  |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Excessive vibration                          |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Industrial pollution                         |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Sand/dust                                    |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Depleted Uranium (If yes, explain) _____     |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Other exposures _____                        |



DD FORM 2796, APR 2003



**Health Care Provider Only**

SERVICE MEMBER'S SOCIAL SECURITY #

--	--	--	--	--	--	--	--	--	--

**Post-Deployment Health Care Provider Review, Interview, and Assessment****Interview**

1. Would you say your health in general is: ☐ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor
2. Do you have any medical or dental problems that developed during this deployment? ☐ Yes ☐ No
3. Are you currently on a profile or light duty? ☐ Yes ☐ No
4. During this deployment have you sought, or do you now intend to seek, counseling or care for your mental health? ☐ Yes ☐ No
5. Do you have concerns about possible exposures or events during this deployment that you feel may affect your health? ☐ Yes ☐ No  
Please list concerns: \_\_\_\_\_
6. Do you currently have any questions or concerns about your health? ☐ Yes ☐ No  
Please list concerns: \_\_\_\_\_

**Health Assessment**

After my interview/exam of the service member and review of this form, there is a need for further evaluation as indicated below. (More than one may be noted for patients with multiple problems. Further documentation of the problem evaluation to be placed in the service member's medical record.)

**REFERRAL INDICATED FOR:**

- ☐ None
- ☐ Cardiac
- ☐ Combat/Operational Stress Reaction
- ☐ Dental
- ☐ Dermatologic
- ☐ ENT
- ☐ Eye
- ☐ Family Problems
- ☐ Fatigue, Malaise, Multisystem complaint
- ☐ Radiology

- ☐ GI
- ☐ GU
- ☐ GYN
- ☐ Mental Health
- ☐ Neurologic
- ☐ Orthopedic
- ☐ Pregnancy
- ☐ Pulmonary
- ☐ Other \_\_\_\_\_

**EXPOSURE CONCERNS (During deployment):**

- ☐ Environmental
- ☐ Occupational
- ☐ Combat or mission related
- ☐ None

Comments: \_\_\_\_\_

I certify that this review process has been completed.

Provider's signature and stamp:

--

This visit is coded by V70.5 \_\_ 6

Date (dd/mm/yyyy)

--	--	--	--	--	--	--	--

**End of Health Review**

DD FORM 2796, APR 2003

ASD(HA) APPROVED



# APPENDIX C: DD 2796 POST-DEPLOYMENT HEALTH ASSESSMENT, 2008 VERSION

**This form must be completed electronically. Handwritten forms will not be accepted.**

## POST-DEPLOYMENT HEALTH ASSESSMENT (PDHA)

### PRIVACY ACT STATEMENT

**AUTHORITY:** 10 U.S.C. 136, 1074f, 3013, 5013, 8013 and E.O. 9397.

**PRINCIPAL PURPOSE(S):** To assess your state of health after deployment in support of military operations and to assist military healthcare providers in identifying and providing present and future medical care you may need. The information you provide may result in a referral for additional healthcare that may include medical, dental or behavioral healthcare or diverse community support services.

**ROUTINE USE(S):** In addition to those disclosures generally permitted under 5 U.S.C. 552a(b) of the Privacy Act, to other Federal and State agencies and civilian healthcare providers, as necessary, in order to provide necessary medical care and treatment. Responses may be used to guide possible referrals.

**DISCLOSURE:** Voluntary. If not provided, healthcare WILL BE furnished, but comprehensive care may not be possible.

**INSTRUCTIONS:** Please read each question completely and carefully before entering your response or marking your selection. **YOU ARE ENCOURAGED TO ANSWER EACH QUESTION. ANSWERING THESE QUESTIONS WILL NOT DELAY YOUR RETURN HOME.** Withholding or providing inaccurate information may impair a healthcare provider's ability to identify health problems and refer you to appropriate sources for additional evaluation or treatment. If you do not understand a question, please ask for help.

### DEMOGRAPHICS

Last Name

First Name

Middle Initial

Social Security Number

Today's Date (dd/mm/yyyy)

Name of Your Unit during this Deployment

Date of Birth (dd/mm/yyyy)

Gender

☐ Male ☐ Female

Service Branch

Component

Pay Grade

☐ Air Force

☐ Active Duty

☐ E1

☐ O1

☐ W1

☐ Army

☐ National Guard

☐ E2

☐ O2

☐ W2

☐ Coast Guard

☐ Reserves

☐ E3

☐ O3

☐ W3

☐ Marine Corps

☐ Civilian Government Employee

☐ E4

☐ O4

☐ W4

☐ Navy

☐ Other

☐ E5

☐ O5

☐ W5

☐ GS Employee

☐ E6

☐ O6

☐ Other

☐ E7

☐ O7

☐ Other

☐ E8

☐ O8

☐ E9

☐ O9

☐ O10

Date of arrival in theater (dd/mm/yyyy)

Date of departure from theater (dd/mm/yyyy)

Name of Operation:

**Location of Operation.** To what areas were you mainly deployed (land-based operations for more than 30 days)?  
(Please mark all that apply, including the number of months spent at each location.)

☐ Country 1

Time at location (months)

☐ Country 2

Time at location (months)

☐ Country 3

Time at location (months)

☐ Country 4

Time at location (months)

☐ Country 5

Time at location (months)

**Occupational specialty during this deployment (MOS/AOC, NEC/NOBC, or AFSC):**

**Combat specialty:**

**Current Contact Information:**

Phone:

Cell:

DSN:

Email:

Address:

**Point of Contact who can always reach you:**

Name:

Phone:

Email:

Mailing Address:



**This form must be completed electronically. Handwritten forms will not be accepted.**

Service Member's Social Security Number: \_\_\_\_\_

- 1. Overall, how would you rate your health during the PAST MONTH?**

☐ Excellent

☐ Very Good

☐ Good

☐ Fair

☐ Poor

**2. Compared to before this deployment, how would you rate your health in general now?**

☐ Much better now than before I deployed

☐ Somewhat better now than before I deployed

☐ About the same as before I deployed

☐ Somewhat worse now than before I deployed

☐ Much worse now than before I deployed
- 3. During the past 4 weeks, how difficult have physical health problems (illness or injury) made it for you to do your work or other regular daily activities?**

☐ Not difficult at all

☐ Somewhat difficult

☐ Very difficult

☐ Extremely difficult

**4. During the past 4 weeks, how difficult have emotional problems (such as feeling depressed or anxious) made it for you to do your work, take care of things at home, or get along with other people?**

☐ Not difficult at all

☐ Somewhat difficult

☐ Very difficult

☐ Extremely difficult
- 5. How many times were you seen by a healthcare provider (physician, PA, medic, corpsman, etc.) for a medical problem or concern during this deployment?**

S A M P L E \_\_\_\_\_

**6. Did you have to spend one or more nights in a hospital as a patient during this deployment?**

☐ No

☐ Yes. Reason/dates: \_\_\_\_\_
- 7. Were you wounded, injured, assaulted or otherwise hurt during this deployment?**

☐ No ☐ Yes

**7a. IF YES, are you still having problems related to this event?**

☐ No ☐ Yes ☐ Unsure

**8. For any of the following symptoms, please indicate whether you went to see a healthcare provider (physician, PA, medic, corpsman, etc.), were placed on quarters (Qtrs) or given light/limited duty (Profile), and whether you are still bothered by the symptom now.**

Symptom	Sick Call?		Qtrs/Profile?		Still Bothered?		Symptom	Sick Call?		Qtrs/Profile?		Still Bothered?	
	No	Yes	No	Yes	No	Yes		No	Yes	No	Yes	No	Yes
Fever	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Dizzy, light headed, passed out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cough lasting more than 3 weeks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Diarrhea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble breathing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Vomiting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bad headaches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Frequent indigestion/heartburn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Generally feeling weak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Problems sleeping or still feeling tired after sleeping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Muscle aches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Trouble concentrating, easily distracted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swollen, stiff or painful joints	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Forgetful or trouble remembering things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Back pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard to make up your mind or make decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Numbness or tingling in hands or feet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Increased irritability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble hearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Skin diseases or rashes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ringing in the ears	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Other (please list):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watery, red eyes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>							
Dimming of vision, like the lights were going out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>							
Chest pain or pressure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>							

**This form must be completed electronically. Handwritten forms will not be accepted.**

Service Member's Social Security Number:

**9.a. During this deployment, did you experience any of the following events? (Mark all that apply)**

- (1) Blast or explosion (IED, RPG, land mine, grenade, etc.) ☐ No ☐ Yes
- (2) Vehicular accident/crash (any vehicle, including aircraft) ☐ No ☐ Yes
- (3) Fragment wound or bullet wound above your shoulders ☐ No ☐ Yes
- (4) Fall ☐ No ☐ Yes
- (5) Other event (for example, a sports injury to your head). Describe: ☐ No ☐ Yes

**9.b. Did any of the following happen to you, or were you told happened to you, IMMEDIATELY after any of the event(s) you just noted in question 9.a.? (Mark all that apply)**

- (1) Lost consciousness or got "knocked out" ☐ No ☐ Yes
- (2) Felt dazed, confused, or "saw stars" ☐ No ☐ Yes
- (3) Didn't remember the event ☐ No ☐ Yes
- (4) Had a concussion ☐ No ☐ Yes
- (5) Had a head injury ☐ No ☐ Yes

**9.c. Did any of the following problems begin or get worse after the event(s) you noted in question 9.a.? (Mark all that apply)**

- (1) Memory problems or lapses ☐ No ☐ Yes
- (2) Balance problems or dizziness ☐ No ☐ Yes
- (3) Ringing in the ears ☐ No ☐ Yes
- (4) Sensitivity to bright light ☐ No ☐ Yes
- (5) Irritability ☐ No ☐ Yes
- (6) Headaches ☐ No ☐ Yes
- (7) Sleep problems ☐ No ☐ Yes

**9.d. In the past week, have you had any of the symptoms you indicated in 9.c.? (Mark all that apply)**

- (1) Memory problems or lapses ☐ No ☐ Yes
- (2) Balance problems or dizziness ☐ No ☐ Yes
- (3) Ringing in the ears ☐ No ☐ Yes
- (4) Sensitivity to bright light ☐ No ☐ Yes
- (5) Irritability ☐ No ☐ Yes
- (6) Headaches ☐ No ☐ Yes
- (7) Sleep problems ☐ No ☐ Yes

**10. Did you encounter dead bodies or see people killed or wounded during this deployment? (Mark all that apply)**  
☐ No ☐ Yes ( ☐ Enemy ☐ Coalition ☐ Civilian )

**11. Were you engaged in direct combat where you discharged a weapon?**  
☐ No ☐ Yes ( ☐ land ☐ sea ☐ air )

**12. During this deployment, did you ever feel that you were in great danger of being killed?**  
☐ No ☐ Yes

**13. Have you ever had any experience that was so frightening, horrible, or upsetting that, IN THE PAST MONTH, you ....**

- a. Have had nightmares about it or thought about it when you did not want to? ☐ No ☐ Yes
- b. Tried hard not to think about it or went out of your way to avoid situations that remind you of it? ☐ No ☐ Yes
- c. Were constantly on guard, watchful, or easily startled? ☐ No ☐ Yes
- d. Felt numb or detached from others, activities, or your surroundings? ☐ No ☐ Yes

**14. Over the PAST MONTH, have you been bothered by the following problems?**

- |                                                | Not at all            | Few or several days   | More than half the days | Nearly every day      |
|------------------------------------------------|-----------------------|-----------------------|-------------------------|-----------------------|
| a. Little interest or pleasure in doing things | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   | <input type="radio"/> |
| b. Feeling down, depressed, or hopeless        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   | <input type="radio"/> |

**15. Alcohol is occasionally available during deployments, e.g., R&R, port call, etc. Prior to deploying or during this deployment:**

- a. Did you use alcohol more than you meant to? ☐ No ☐ Yes
- b. Have you felt that you wanted to or needed to cut down on your drinking? ☐ No ☐ Yes
- c. How often do you have a drink containing alcohol?  
☐ Never ☐ Monthly or less ☐ 2 to 4 times a month ☐ 2 to 3 times a week ☐ 4 or more times a week
- d. How many drinks containing alcohol do you have on a typical day when you are drinking?  
☐ 1 or 2 ☐ 3 or 4 ☐ 5 or 6 ☐ 7 to 9 ☐ 10 or more
- e. How often do you have six or more drinks on one occasion?  
☐ Never ☐ Less than monthly ☐ Monthly ☐ Weekly ☐ Daily

DD FORM 2796, JAN 2008

Page 3 of 7 Pages

**This form must be completed electronically. Handwritten forms will not be accepted.**

Service Member's Social Security Number:

16. Are you worried about your health because you were exposed to: (Mark all that apply)	No	Yes
Animal bites	<input type="radio"/>	<input type="radio"/>
Animal bodies (dead)	<input type="radio"/>	<input type="radio"/>
Chlorine gas	<input type="radio"/>	<input type="radio"/>
Depleted uranium (If yes, explain)	<input type="radio"/>	<input type="radio"/>
Excessive vibration	<input type="radio"/>	<input type="radio"/>
Fog oils (smoke screen)	<input type="radio"/>	<input type="radio"/>
Garbage	<input type="radio"/>	<input type="radio"/>
Human blood, body fluids, body parts, or dead bodies	<input type="radio"/>	<input type="radio"/>
Industrial pollution	<input type="radio"/>	<input type="radio"/>
Insect bites	<input type="radio"/>	<input type="radio"/>
Ionizing radiation	<input type="radio"/>	<input type="radio"/>
JP8 or other fuels	<input type="radio"/>	<input type="radio"/>
Lasers	<input type="radio"/>	<input type="radio"/>
Loud noises	<input type="radio"/>	<input type="radio"/>
Paints	<input type="radio"/>	<input type="radio"/>
Pesticides	<input type="radio"/>	<input type="radio"/>
Radar/Microwaves	<input type="radio"/>	<input type="radio"/>
Sand/dust	<input type="radio"/>	<input type="radio"/>
Smoke from burning trash or feces	<input type="radio"/>	<input type="radio"/>
Smoke from oil fire	<input type="radio"/>	<input type="radio"/>
Solvents	<input type="radio"/>	<input type="radio"/>
Tent heater smoke	<input type="radio"/>	<input type="radio"/>
Vehicle or truck exhaust fumes	<input type="radio"/>	<input type="radio"/>
Other exposures to toxic chemicals or materials, such as ammonia, nitric acid, etc.: (If yes, explain)	<input type="radio"/>	<input type="radio"/>

S A M P L E

17. Were you exposed to any chemicals or other hazard (industrial, environmental, etc.) that required you to seek immediate medical care?

☐ No ☐ Yes

18. Did you enter or closely inspect any destroyed military vehicles?

☐ No ☐ Yes

19. Do you think you were exposed to any chemical, biological, or radiological warfare agents during this deployment?

☐ No ☐ Don't know ☐ Yes, explain with date and location

20. This question assesses your personal risk for exposure to tuberculosis or other local infectious diseases.

Would you say your INDOOR contact with local or 3rd country nationals was:

☐ None ☐ Minimal (less than 1 hour per week) ☐ Moderate (1 or more hours per week, but not daily) ☐ Extensive (at least 1 hour per day, every day)

21. Force Health Protection Measures. Please indicate which of the following items you used during this deployment and how often you used them.

	Daily	Most days	Some days	Never	Not available	Not required
DEET insect repellent applied to skin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pesticide-treated uniforms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eye protection (not commercial sunglasses or prescription glasses)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hearing protection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
N-95 or other respirator (not gas mask)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pills to stay awake, like dexedrine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anti-NBC meds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pyridostigmine (nerve agent pill)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nerve agent antidote injector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seizure/convulsion antidote injector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
NBC gas mask	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MOPP over garments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

DD FORM 2796, JAN 2008

Page 4 of 7 Pages

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Service Member's Social Security Number:** \_\_\_\_\_

**22. Did you receive any vaccinations just before or during this deployment?**

- ☐ Smallpox (*leaves a scar on the arm*)  
☐ Anthrax  
☐ Botulism  
☐ Typhoid  
☐ Meningococcal  
☐ Yellow Fever  
☐ Other, list: \_\_\_\_\_  
☐ No  
☐ Don't know

**23. Were you told to take medicines to prevent malaria?**

- ☐ No ☐ Yes

If YES, please indicate which medicines you took and whether you missed any doses. (*Mark all that apply*)

Anti-malarial medications	Took All Pills
<input type="radio"/> Chloroquine (Aralen®)	<input type="radio"/> No <input type="radio"/> Yes
<input type="radio"/> Doxycycline (Vibramycin®)	<input type="radio"/> No <input type="radio"/> Yes
<input type="radio"/> Mefloquine (Lariam®)	<input type="radio"/> No <input type="radio"/> Yes
<input type="radio"/> Primaquine	<input type="radio"/> No <input type="radio"/> Yes
<input type="radio"/> Other : _____	<input type="radio"/> No <input type="radio"/> Yes

**24. Would you like to schedule a visit with a healthcare provider to further discuss your health concern(s)?**

- ☐ No ☐ Yes

**25. Are you currently interested in receiving information or assistance for a stress, emotional or alcohol concern?**

- ☐ No ☐ Yes

**26. Are you currently interested in receiving assistance for a family or relationship concern?**

- ☐ No ☐ Yes

**27. Would you like to schedule a visit with a chaplain or a community support counselor?**

- ☐ No ☐ Yes

S A M P L E



**This form must be completed electronically. Handwritten forms will not be accepted.**

Service Member's Social Security Number: \_\_\_\_\_

**Health Care Provider Only**

**Post-Deployment Health Care Provider Review, Interview, and Assessment**

1. Do you have any medical or dental problems that developed during this deployment? ☐ Yes ☐ No  
If yes, are the problems still bothering you now? ☐ Yes ☐ No
2. Are you currently on a profile (or LIMDU) that restricts your activities (light or limited duty)? ☐ Yes ☐ No  
If yes: For what reason? \_\_\_\_\_ ☐ NA  
Is your condition due to an injury or illness that occurred during the deployment? ☐ Yes ☐ No ☐ NA  
Did you have similar problems prior to deployment? ☐ Yes ☐ No ☐ NA  
If so, did your condition worsen during the deployment? ☐ Yes ☐ No ☐ NA
3. Ask the following behavioral risk questions. Conduct risk assessment as necessary.
- a. Over the PAST MONTH, have you been bothered by thoughts that you would be better off dead or of hurting yourself in some way? ☐ Yes ☐ No  
If YES, about how often have you been bothered by these thoughts? ☐ A few days ☐ More than half of the time ☐ Nearly every day
- b. Over the PAST MONTH, have you had thoughts or concerns that you might hurt or lose control with someone? ☐ Yes ☐ No ☐ Unsure
4. If member reports YES or UNSURE responses to 3.a. or 3.b., conduct risk assessment.
- a. Does member pose a current risk for harm to self or others? ☐ No, not a current risk ☐ Yes, poses a current risk ☐ Unsure
- b. Outcome of assessment ☐ Immediate referral ☐ Routine follow-up referral ☐ Referral not indicated
5. Alcohol screening result  
☐ No evidence of alcohol-related problems  
☐ Potential alcohol problem (positive response to either question 15.a. or 15.b. and/or AUDIT-C (questions 15.c.-e.) score of 4 or more for men or 3 or more for women).  
Refer to PCM for evaluation. ☐ Yes ☐ No
6. During this deployment have you sought, or do you now intend to seek, counseling or care for your mental health? ☐ Yes ☐ No
7. Traumatic Brain Injury (TBI) risk assessment  
☐ No evidence of risk based on responses to questions 9.a. - d.  
☐ Potential TBI with persistent symptoms, based on responses to question 9.d.  
Refer for additional evaluation. ☐ Yes ☐ No
8. Tuberculosis risk assessment, based on response to question 20.  
☐ Minimal risk  
☐ Increased risk  
Recommend tuberculosis skin testing in 60-90 days ☐ Yes ☐ No
9. Depleted Uranium (DU) risk assessment, based on responses to question 16 (DU, Yes) or question 18 (Yes).  
☐ No evidence of exposure to depleted uranium  
☐ Potential exposure to depleted uranium  
Refer to PCM for completion of DD Form 2872 and possible 24-hour urinalysis. ☐ Yes ☐ No
10. Do you have any other concerns about possible exposures or events during this deployment that you feel may affect your health? ☐ Yes ☐ No  
Please list your concerns: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
11. Do you currently have any questions or concerns about your health? ☐ Yes ☐ No  
Please list your concerns: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Service Member's Social Security Number:**

**Health Assessment**

After my interview/examination of the service member and review of this form, there is a need for further evaluation and follow-up as indicated below. (More than one may be noted for patients with multiple problems. Further documentation of the problem evaluation to be placed in service member's medical record.)

11. Identified Concerns	Minor Concern	Major Concern	Already Under Care		12. Referral Information	Within 24 hours	Within 7 days	Within 30 days
			Yes	No				
<input type="checkbox"/> Physical Symptom(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	a. Primary Care, Family Practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Exposure Symptom(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	b. Behavioral Health in Primary Care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Environmental	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	c. Mental Health Specialty Care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Occupational	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	d. Other specialty care:			
<input type="checkbox"/> Combat or mission-related	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Audiology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Depression symptoms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cardiology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> PTSD symptoms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dentistry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Anger/Aggression	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Dermatology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Suicidal Ideation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ENT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Social/Family Conflict	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	GI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Alcohol Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Internal Medicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Neurology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Comments:					OB/GYN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					Ophthalmology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					Optometry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					Orthopedics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					Pulmonology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					Urology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					e. Case Manager, Care Manager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					f. Substance Abuse Program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					g. Health Promotion, Health Education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					h. Chaplain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					i. Family Support, Community Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					j. Military OneSource	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					k. Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					l. No referral made	<input type="checkbox"/>		

I certify that this review process has been completed.

Provider's signature and stamp:

This visit is coded by V70.5 \_ E

Date (dd/mm/yyyy)

**S A M P L E**

**Ancillary Staff/Administrative Section**

14. Member was provided the following:	15. Referral was made to the following healthcare or support system:
<input type="checkbox"/> Medical Threat Debrief	<input type="checkbox"/> Military Treatment Facility
<input type="checkbox"/> Health Education and Information	<input type="checkbox"/> Division/Line-based medical resource
<input type="checkbox"/> Health Care Benefits and Resources Information	<input type="checkbox"/> VA Medical Center or Community Clinic
<input type="checkbox"/> Appointment Assistance	<input type="checkbox"/> Vet Center
<input type="checkbox"/> Service member declined to complete form	<input type="checkbox"/> TRICARE Provider
<input type="checkbox"/> Service member declined to complete interview/assessment	<input type="checkbox"/> Contract Support: _____
<input type="checkbox"/> Service member declined referral for services	<input type="checkbox"/> Community Service: _____
<input type="checkbox"/> LOD	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Post-deployment blood specimen collected (if required)	<input type="checkbox"/> None
<input type="checkbox"/> Other: _____	

# APPENDIX D: DD 2900 POST-DEPLOYMENT HEALTH REASSESSMENT, 2005 VERSION



## POST-DEPLOYMENT HEALTH REASSESSMENT (PDHRA)

Authority: 10 U.S.C. 136 Chapter 55, 1074f, 3013, 5013, 8013 and E.O. 9397

**Principal Purpose:** To assess your state of health after deployment in support of military operations and to assist military healthcare providers, including behavioral health providers, in identifying present and future medical care needs you may have. The information you provide may result in a referral for additional healthcare that may include behavioral healthcare.

**Routine Use:** To other Federal and State agencies and civilian healthcare providers as necessary in order to provide necessary medical care and treatment. Responses may be used to guide possible referrals.

**Disclosure:** Disclosure is voluntary.

**INSTRUCTIONS:** Please read each question completely and carefully before making your selections. Provide a response for each question. If you do not understand a question, ask the administrator. Please respond based on your **MOST RECENT DEPLOYMENT**.

### Demographics

Last Name

Today's Date (dd/mm/yyyy)

First Name

DOB (dd/mm/yyyy)

Date arrived theater (mm/yyyy)

Date departed theater (mm/yyyy)

Social Security Number

Gender

- ☐ Male  
☐ Female

Service Branch

- ☐ Air Force  
☐ Army  
☐ Navy  
☐ Marine Corps  
☐ Coast Guard  
☐ Other

Status Prior to Deployment

- ☐ Active Duty  
☐ Selected Reserves - Reserve Unit  
☐ Selected Reserves - Reserve - AGR  
☐ Selected Reserves - Reserve - IMA  
☐ Selected Reserves - National Guard - Unit  
☐ Selected Reserves - National Guard - AGR  
☐ Ready Reserves - IRR  
☐ Ready Reserves - ING  
☐ Civilian Government Employee  
☐ Other

Pay Grade

- ☐ E1 ☐ O01 ☐ W1  
☐ E2 ☐ O02 ☐ W2  
☐ E3 ☐ O03 ☐ W3  
☐ E4 ☐ O04 ☐ W4  
☐ E5 ☐ O05 ☐ W5  
☐ E6 ☐ O06  
☐ E7 ☐ O07 ☐ Other  
☐ E8 ☐ O08  
☐ E9 ☐ O09  
☐ O10

Location of Operation

- ☐ Iraq ☐ South America  
☐ Afghanistan ☐ North America  
☐ Kuwait ☐ Australia  
☐ Qatar ☐ Europe  
☐ Bosnia/Kosovo ☐ On a ship  
☐ SW Asia - other ☐ Other:  
☐ Africa

Since return from deployment I have:

- ☐ Maintained/returned to previous status  
☐ Transitioned to Selected Reserves:  
☐ Transitioned to Ready Reserves:  
☐ Retired from Military Service  
☐ Separated from Military Service

Current Contact Information:

Phone: \_\_\_\_\_  
Cell: \_\_\_\_\_  
DSN: \_\_\_\_\_  
Email: \_\_\_\_\_  
Address: \_\_\_\_\_

Total Deployments in Past 5 Years:

- |                                 |                                 |                                 |
|---------------------------------|---------------------------------|---------------------------------|
| OIF                             | OEF                             | Other                           |
| <input type="radio"/> 1         | <input type="radio"/> 1         | <input type="radio"/> 1         |
| <input type="radio"/> 2         | <input type="radio"/> 2         | <input type="radio"/> 2         |
| <input type="radio"/> 3         | <input type="radio"/> 3         | <input type="radio"/> 3         |
| <input type="radio"/> 4         | <input type="radio"/> 4         | <input type="radio"/> 4         |
| <input type="radio"/> 5 or more | <input type="radio"/> 5 or more | <input type="radio"/> 5 or more |

Current Unit of Assignment

Current Assignment Location

Point of Contact who can always reach you:

Name: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Email: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_

DD FORM 2900, JUN 2005

ASD(HA) APPROVED



1. Overall, how would you rate your health during the PAST MONTH?  
☐ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor
2. Compared to before your most recent deployment, how would you rate your health in general now?  
☐ Much better now than before I deployed  
☐ Somewhat better now than before I deployed  
☐ About the same as before I deployed  
☐ Somewhat worse now than before I deployed  
☐ Much worse now than before I deployed
3. Since you returned from deployment, about how many times have you seen a healthcare provider for any reason, such as in sick call, emergency room, primary care, family doctor, or mental health provider?  
☐ No visits ☐ 1 visit ☐ 2-3 visits ☐ 4-5 visits ☐ Over 6 visits
4. Since you returned from deployment, have you been hospitalized?  
☐ Yes ☐ No
5. During your deployment, were you wounded, injured, assaulted or otherwise physically hurt?  
☐ Yes ☐ No
- IF NO, skip to Question 6.**
- 5a. **IF YES**, are you still having problems related to this wound, assault, or injury?  
☐ Yes ☐ No ☐ Unsure
6. Other than wounds or injuries, do you currently have a health concern or condition that you feel is related to your deployment?  
☐ Yes ☐ No ☐ Unsure
- IF NO, skip to Question 7.**
- 6a. **IF YES**, please mark the item(s) that best describe your deployment-related condition or concerns:
- |                                                             |                                                                               |
|-------------------------------------------------------------|-------------------------------------------------------------------------------|
| <input type="radio"/> Chronic cough                         | <input type="radio"/> Redness of eyes with tearing                            |
| <input type="radio"/> Runny nose                            | <input type="radio"/> Dimming of vision, like the lights were going out       |
| <input type="radio"/> Fever                                 | <input type="radio"/> Chest pain or pressure                                  |
| <input type="radio"/> Weakness                              | <input type="radio"/> Dizziness, lightheadedness, or headachiness             |
| <input type="radio"/> Headaches                             | <input type="radio"/> Difficulty breathing                                    |
| <input type="radio"/> Swollen, stiff or painful joints      | <input type="radio"/> Diarrhea, vomiting, or frequent indigestion             |
| <input type="radio"/> Back pain                             | <input type="radio"/> Problems sleeping or still feeling tired after sleeping |
| <input type="radio"/> Muscle aches                          | <input type="radio"/> Difficulty remembering                                  |
| <input type="radio"/> Numbness or tingling in hands or feet | <input type="radio"/> Increased irritability                                  |
| <input type="radio"/> Skin diseases or rashes               | <input type="radio"/> Taking more risks such as driving faster                |
| <input type="radio"/> Ringing of the ears                   | <input type="radio"/> Other: _____                                            |
7. Do you have any persistent major concerns regarding the health effects of something you believe you may have been exposed to or encountered while deployed?  
☐ Yes ☐ No
- IF NO, skip to Question 8.**
- 7a. **IF YES**, please mark the item(s) that best describe your concern:
- |                                                                    |                                                          |
|--------------------------------------------------------------------|----------------------------------------------------------|
| <input type="radio"/> DEET insect repellent applied to skin        | <input type="radio"/> Paints                             |
| <input type="radio"/> Pesticide-treated uniforms                   | <input type="radio"/> Radiation                          |
| <input type="radio"/> Environmental pesticides (like area fogging) | <input type="radio"/> Radar/microwaves                   |
| <input type="radio"/> Flea or tick collars                         | <input type="radio"/> Lasers                             |
| <input type="radio"/> Pesticide strips                             | <input type="radio"/> Loud noises                        |
| <input type="radio"/> Smoke from oil fire                          | <input type="radio"/> Excessive vibration                |
| <input type="radio"/> Smoke from burning trash or feces            | <input type="radio"/> Industrial pollution               |
| <input type="radio"/> Vehicle or truck exhaust fumes               | <input type="radio"/> Sand/dust                          |
| <input type="radio"/> Tent heater smoke                            | <input type="radio"/> Blast or motor vehicle accident    |
| <input type="radio"/> JP8 or other fuels                           | <input type="radio"/> Depleted Uranium (if yes, explain) |
| <input type="radio"/> Fog oils (smoke screen)                      |                                                          |
| <input type="radio"/> Solvents                                     | <input type="radio"/> Other: _____                       |



8. Since return from your deployment, have you had serious conflicts with your spouse, family members, close friends, or at work that continue to cause you worry or concern? ☐ Yes ☐ No ☐ Unsure
9. Have you had any experience that was so frightening, horrible, or upsetting that, IN THE PAST MONTH, you ....
- a. Have had any nightmares about it or thought about it when you did not want to ☐ Yes ☐ No
  - b. Tried hard not to think about it or went out of your way to avoid situations that remind you of it ☐ Yes ☐ No
  - c. Were constantly on guard, watchful, or easily startled ☐ Yes ☐ No
  - d. Felt numb or detached from others, activities, or your surroundings ☐ Yes ☐ No
10. a. In the PAST MONTH, did you use alcohol more than you meant to? ☐ Yes ☐ No
- b. In the PAST MONTH, have you felt that you wanted to or needed to cut down on your drinking? ☐ Yes ☐ No
11. Over the PAST MONTH, have you been bothered by the following problems?
- |                                                | Not at all            | Few or several days   | More than half the days | Nearly every day      |
|------------------------------------------------|-----------------------|-----------------------|-------------------------|-----------------------|
| a. Little interest or pleasure in doing things | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   | <input type="radio"/> |
| b. Feeling down, depressed, or hopeless        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   | <input type="radio"/> |
12. If you checked off any problems or concerns on this questionnaire, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?
- ☐ Not difficult at all ☐ Somewhat difficult ☐ Very difficult ☐ Extremely difficult
13. Would you like to schedule a visit with a healthcare provider to further discuss your health concern(s)? ☐ Yes ☐ No
14. Are you currently interested in receiving information or assistance for a stress, emotional or alcohol concern? ☐ Yes ☐ No
15. Are you currently interested in receiving assistance for a family or relationship concern? ☐ Yes ☐ No
16. Would you like to schedule a visit with a chaplain or a community support counselor? ☐ Yes ☐ No

**Health Care Provider Only**

SERVICE MEMBER'S SOCIAL SECURITY #

--	--	--	--	--	--	--	--	--	--

DATE (dd/mm/yyyy)

--	--	--	--	--	--	--	--	--	--

**Provider Review and Interview**

## 1. Review symptoms and deployment concerns identified on form:

- ☐ Confirmed screening results as reported      ☐ Screening results modified, amended, clarified during interview:

## 2. Ask behavioral risk questions.

- a. Over the PAST MONTH, have you been bothered by thoughts that you would be better off dead or of hurting yourself in some way? ☐ Yes ☐ No

IF YES, about how often have you been bothered by these thoughts? ☐ Very few days ☐ More than half of the time ☐ Nearly every day

- b. Since return from your deployment, have you had thoughts or concerns that you might hurt or lose control with someone? ☐ Yes ☐ No ☐ Unsure

## 3. IF YES OR UNSURE to behavioral risk questions, conduct risk assessment.

- a. Does member pose a current risk for harm to self or others? ☐ No, not a current risk ☐ Yes, poses a current risk ☐ Unsure, referred
- b. Outcome of assessment ☐ Immediate referral ☐ Routine follow-up referral ☐ Referral not indicated

## 4. Record additional questions or concerns identified by patient during interview:

**Assessment and Referral:** After my interview with the service member and review of this form, there is a need for further evaluation and follow-up as indicated below. (More than one may be noted for patients with multiple concerns.)

## 5. Identified Concerns

- |                                              | Minor Concern         | Major Concern         | Already Under Care    |                       |
|----------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                                              |                       |                       | Yes                   | No                    |
| <input type="radio"/> Physical Symptom       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> Exposure Concern       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> Depression Symptoms    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> PTSD Symptoms          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> Anger/Aggression       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> Suicidal Ideation      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> Social/Family Conflict | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> Alcohol Use            | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> Other: _____           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <input type="radio"/> None                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

## 7. Comments:

## 8. Provider

a. Name (Last, First)

b. Signature and Stamp:

## 6. Referral Information

- ☐ a. No referral made
- ☐ b. Immediate/emergent care
- ☐ c. Primary Care, Family Practice
- ☐ d. Specialty Care: \_\_\_\_\_
- ☐ e. Behavioral Health in Primary Care
- ☐ f. Mental Health Specialty Care
- ☐ g. Case Manager, Care Manager
- ☐ h. Substance Abuse Program
- ☐ i. Health Promotion, Health Education
- ☐ j. Other Healthcare Service
- ☐ k. Chaplain
- ☐ l. Family Support, Community Service
- ☐ m. Military OneSource
- ☐ n. Other: \_\_\_\_\_

ICD-9 Code for this visit: V70.5\_6

**Auxiliary Staff/Administrative Section**

## 9. Member was provided the following:

- ☐ Health Education and Information
- ☐ Health Care Benefits and Resources Information
- ☐ Appointment Assistance
- ☐ Service member declined to complete form
- ☐ Service member declined to complete interview/assessment
- ☐ Service member declined referral for services
- ☐ Other: \_\_\_\_\_

## 10. Referral made to the following healthcare or support system:

- ☐ Military Treatment Facility
- ☐ Division/Line-Based Medical Resource
- ☐ VA Medical Center or Community Clinic
- ☐ Vet Center
- ☐ TRICARE Provider
- ☐ Contract Support: \_\_\_\_\_
- ☐ Community Service: \_\_\_\_\_
- ☐ Other: \_\_\_\_\_
- ☐ None

DD FORM 2900, JUN 2005

ASD(HA) APPROVED



# APPENDIX E: DD 2900 POST-DEPLOYMENT HEALTH REASSESSMENT, 2008 VERSION

This form must be completed electronically. Handwritten forms will not be accepted.

## POST-DEPLOYMENT HEALTH RE-ASSESSMENT (PDHRA)

### PRIVACY ACT STATEMENT

AUTHORITY: 10 U.S.C. 136, 1074f, 3013, 5013, 8013 and E.O. 9397.

**PRINCIPAL PURPOSE(S):** To assess your state of health after deployment in support of military operations and to assist military healthcare providers in identifying and providing present and future medical care you may need. The information you provide may result in a referral for additional healthcare that may include medical, dental or behavioral healthcare or diverse community support services.

**ROUTINE USE(S):** In addition to those disclosures generally permitted under 5 U.S.C. 552a(b) of the Privacy Act, to other Federal and State agencies and civilian healthcare providers, as necessary, in order to provide necessary medical care and treatment.

**DISCLOSURE:** Voluntary. If not provided, healthcare WILL BE furnished, but comprehensive care may not be possible.

**INSTRUCTIONS:** Please read each question completely and carefully before entering your response or marking your selection. **YOU ARE ENCOURAGED TO ANSWER EACH QUESTION.** Withholding or providing inaccurate information may impair a healthcare provider's ability to identify health problems and refer you to appropriate sources for additional evaluation or treatment. If you do not understand a question, please ask for help. Please respond based on your **MOST RECENT DEPLOYMENT**.

### DEMOGRAPHICS

Last Name	First Name	Middle Initial
S	A	M
P	L	E

Social Security Number \_\_\_\_\_ Date of Birth (dd/mm/yyyy) \_\_\_\_\_ Today's Date (dd/mm/yyyy) \_\_\_\_\_

Date arrived theater (dd/mm/yyyy) \_\_\_\_\_ Date departed theater (dd/mm/yyyy) \_\_\_\_\_

<b>Gender</b> <input type="radio"/> Male <input type="radio"/> Female	<b>Service Branch</b> <input type="radio"/> Air Force <input type="radio"/> Army <input type="radio"/> Navy <input type="radio"/> Marine Corps <input type="radio"/> Coast Guard <input type="radio"/> Civilian Employee <input type="radio"/> Other	<b>Status Prior to Deployment</b> <input type="radio"/> Active Duty <input type="radio"/> Selected Reserves - Reserve - Unit <input type="radio"/> Selected Reserves - Reserve - AGR <input type="radio"/> Selected Reserves - Reserve - IMA <input type="radio"/> Selected Reserves - National Guard - Unit <input type="radio"/> Selected Reserves - National Guard - AGR <input type="radio"/> Ready Reserves - IRR <input type="radio"/> Ready Reserves - ING <input type="radio"/> Civilian Government Employee <input type="radio"/> Other	<b>Pay Grade</b> <table><tbody><tr><td><input type="radio"/> E1</td><td><input type="radio"/> O1</td><td><input type="radio"/> W1</td></tr><tr><td><input type="radio"/> E2</td><td><input type="radio"/> O2</td><td><input type="radio"/> W2</td></tr><tr><td><input type="radio"/> E3</td><td><input type="radio"/> O3</td><td><input type="radio"/> W3</td></tr><tr><td><input type="radio"/> E4</td><td><input type="radio"/> O4</td><td><input type="radio"/> W4</td></tr><tr><td><input type="radio"/> E5</td><td><input type="radio"/> O5</td><td><input type="radio"/> W5</td></tr><tr><td><input type="radio"/> E6</td><td><input type="radio"/> O6</td><td></td></tr><tr><td><input type="radio"/> E7</td><td><input type="radio"/> O7</td><td><input type="radio"/> Other</td></tr><tr><td><input type="radio"/> E8</td><td><input type="radio"/> O8</td><td></td></tr><tr><td><input type="radio"/> E9</td><td><input type="radio"/> O9</td><td></td></tr><tr><td></td><td><input type="radio"/> O10</td><td></td></tr></tbody></table>	<input type="radio"/> E1	<input type="radio"/> O1	<input type="radio"/> W1	<input type="radio"/> E2	<input type="radio"/> O2	<input type="radio"/> W2	<input type="radio"/> E3	<input type="radio"/> O3	<input type="radio"/> W3	<input type="radio"/> E4	<input type="radio"/> O4	<input type="radio"/> W4	<input type="radio"/> E5	<input type="radio"/> O5	<input type="radio"/> W5	<input type="radio"/> E6	<input type="radio"/> O6		<input type="radio"/> E7	<input type="radio"/> O7	<input type="radio"/> Other	<input type="radio"/> E8	<input type="radio"/> O8		<input type="radio"/> E9	<input type="radio"/> O9			<input type="radio"/> O10	
<input type="radio"/> E1	<input type="radio"/> O1	<input type="radio"/> W1																															
<input type="radio"/> E2	<input type="radio"/> O2	<input type="radio"/> W2																															
<input type="radio"/> E3	<input type="radio"/> O3	<input type="radio"/> W3																															
<input type="radio"/> E4	<input type="radio"/> O4	<input type="radio"/> W4																															
<input type="radio"/> E5	<input type="radio"/> O5	<input type="radio"/> W5																															
<input type="radio"/> E6	<input type="radio"/> O6																																
<input type="radio"/> E7	<input type="radio"/> O7	<input type="radio"/> Other																															
<input type="radio"/> E8	<input type="radio"/> O8																																
<input type="radio"/> E9	<input type="radio"/> O9																																
	<input type="radio"/> O10																																

### Location of Operation

To what areas were you mainly deployed (land-based operations more than 30 days)? Please mark all that apply, including the number of months spent at each location.

<input type="radio"/> Country 1	Months
<input type="radio"/> Country 2	Months
<input type="radio"/> Country 3	Months
<input type="radio"/> Country 4	Months
<input type="radio"/> Country 5	Months

### Since return from deployment I have:

☐ Maintained/returned to previous status  
☐ Transitioned to Selected Reserves  
☐ Transitioned to IRR  
☐ Transitioned to ING  
☐ Retired from Military Service  
☐ Separated from Military Service

### Current Contact Information:

Phone: \_\_\_\_\_  
Cell: \_\_\_\_\_  
DSN: \_\_\_\_\_  
Email: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Total Deployments in Past 5 Years:

<b>OIF</b>	<b>OEF</b>	<b>Other</b>
<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1
<input type="radio"/> 2	<input type="radio"/> 2	<input type="radio"/> 2
<input type="radio"/> 3	<input type="radio"/> 3	<input type="radio"/> 3
<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4
<input type="radio"/> 5 or more	<input type="radio"/> 5 or more	<input type="radio"/> 5 or more

### Current Unit of Assignment

\_\_\_\_\_  
**Current Assignment Location**  
\_\_\_\_\_  
\_\_\_\_\_

### Point of Contact who can always reach you:

Name: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Email: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**This form must be completed electronically. Handwritten forms will not be accepted.**  
Service Member's Social Security Number:

1. Overall, how would you rate your health during the PAST MONTH?  
☐ Excellent  
☐ Very Good  
☐ Good  
☐ Fair  
☐ Poor
2. Compared to before your most recent deployment, how would you rate your health in general now?  
☐ Much better now than before I deployed  
☐ Somewhat better now than before I deployed  
☐ About the same as before I deployed  
☐ Somewhat worse now than before I deployed  
☐ Much worse now than before I deployed
3. During the past 4 weeks, how difficult have physical health problems (illness or injury) made it for you to do your work or other regular daily activities?  
☐ Not difficult at all  
☐ Somewhat difficult  
☐ Very difficult  
☐ Extremely difficult
4. During the past 4 weeks, how difficult have emotional problems (such as feeling depressed or anxious) made it for you to do your work, take care of things at home, or get along with other people?  
☐ Not difficult at all  
☐ Somewhat difficult  
☐ Very difficult  
☐ Extremely difficult
5. Since you returned from deployment, about how many times have you seen a healthcare provider for any reason, such as in sick call, emergency room, primary care, family doctor, or mental health provider?  
☐ No visits  
☐ 1 visit  
☐ 2-3 visits  
☐ 4-5 visits  
☐ 6 or more
6. Since you returned from deployment, have you been hospitalized?  
☐ Yes  
☐ No
7. During your deployment, were you wounded, injured, assaulted or otherwise physically hurt?  
☐ Yes  
☐ No  
If NO, skip to Question 8.
- 7a. If YES, are you still having problems related to this wound, assault, or injury?  
☐ Yes  
☐ No  
☐ Unsure
8. In addition to wounds or injuries you listed in question 7., do you currently have a health concern or condition that you feel is related to your deployment?  
☐ Yes  
☐ No  
☐ Unsure  
If NO, skip to Question 9.

8a. If YES, please mark the item(s) that best describe your deployment-related condition or concern:

<input type="radio"/> Fever	<input type="radio"/> Dimming of vision, like the lights were going out
<input type="radio"/> Cough lasting more than 3 weeks	<input type="radio"/> Chest pain or pressure
<input type="radio"/> Trouble breathing	<input type="radio"/> Dizzy, light headed, passed out
<input type="radio"/> Bad headaches	<input type="radio"/> Diarrhea, vomiting, or frequent indigestion/heartburn
<input type="radio"/> Generally feeling weak	<input type="radio"/> Problems sleeping or still feeling tired after sleeping
<input type="radio"/> Muscle aches	<input type="radio"/> Trouble concentrating, easily distracted
<input type="radio"/> Swollen, stiff or painful joints	<input type="radio"/> Forgetful or trouble remembering things
<input type="radio"/> Back pain	<input type="radio"/> Hard to make up your mind or make decisions
<input type="radio"/> Numbness or tingling in hands or feet	<input type="radio"/> Increased irritability
<input type="radio"/> Trouble hearing	<input type="radio"/> Taking more risks such as driving faster
<input type="radio"/> Ringing in the ears	<input type="radio"/> Skin diseases or rashes
<input type="radio"/> Watery, red eyes	<input type="radio"/> Other (please list):

- 9a. During this deployment, did you experience any of the following events? (Mark all that apply)
- |                                                                        | Yes                   | No                    |
|------------------------------------------------------------------------|-----------------------|-----------------------|
| (1) Blast or explosion (IED, RPG, land mine, grenade, etc.)            | <input type="radio"/> | <input type="radio"/> |
| (2) Vehicular accident/crash (any vehicle, including aircraft)         | <input type="radio"/> | <input type="radio"/> |
| (3) Fragment wound or bullet wound above your shoulders                | <input type="radio"/> | <input type="radio"/> |
| (4) Fall                                                               | <input type="radio"/> | <input type="radio"/> |
| (5) Other event (for example, a sports injury to your head). Describe: | <input type="radio"/> | <input type="radio"/> |
- 9b. Did any of the following happen to you, or were you told happened to you, IMMEDIATELY after any of the event(s) you just noted in question 9a.? (Mark all that apply)
- |                                             | Yes                   | No                    |
|---------------------------------------------|-----------------------|-----------------------|
| (1) Lost consciousness or got "knocked out" | <input type="radio"/> | <input type="radio"/> |
| (2) Felt dazed, confused, or "saw stars"    | <input type="radio"/> | <input type="radio"/> |
| (3) Didn't remember the event               | <input type="radio"/> | <input type="radio"/> |
| (4) Had a concussion                        | <input type="radio"/> | <input type="radio"/> |
| (5) Had a head injury                       | <input type="radio"/> | <input type="radio"/> |
- c. Did any of the following problems begin or get worse after the event(s) you noted in question 9a.? (Mark all that apply)
- |                                   | Yes                   | No                    |
|-----------------------------------|-----------------------|-----------------------|
| (1) Memory problems or lapses     | <input type="radio"/> | <input type="radio"/> |
| (2) Balance problems or dizziness | <input type="radio"/> | <input type="radio"/> |
| (3) Ringing in the ears           | <input type="radio"/> | <input type="radio"/> |
| (4) Sensitivity to bright light   | <input type="radio"/> | <input type="radio"/> |
| (5) Irritability                  | <input type="radio"/> | <input type="radio"/> |
| (6) Headaches                     | <input type="radio"/> | <input type="radio"/> |
| (7) Sleep problems                | <input type="radio"/> | <input type="radio"/> |
- d. In the past week, have you had any of the symptoms you indicated in 9c.? (Mark all that apply)
- |                                   | Yes                   | No                    |
|-----------------------------------|-----------------------|-----------------------|
| (1) Memory problems or lapses     | <input type="radio"/> | <input type="radio"/> |
| (2) Balance problems or dizziness | <input type="radio"/> | <input type="radio"/> |
| (3) Ringing in the ears           | <input type="radio"/> | <input type="radio"/> |
| (4) Sensitivity to bright light   | <input type="radio"/> | <input type="radio"/> |
| (5) Irritability                  | <input type="radio"/> | <input type="radio"/> |
| (6) Headaches                     | <input type="radio"/> | <input type="radio"/> |
| (7) Sleep problems                | <input type="radio"/> | <input type="radio"/> |

**This form must be completed electronically. Handwritten forms will not be accepted.**

Service Member's Social Security Number: \_\_\_\_\_

10. Do you have any persistent major concerns regarding the health effects of something you believe you may have been exposed to or encountered while deployed? ☐ Yes ☐ No  
If NO, skip to question 11.

10a. If YES, please mark the item(s) that best describe your concern:

<input type="radio"/> Animal bites	<input type="radio"/> Loud noises
<input type="radio"/> Animal bodies (dead)	<input type="radio"/> Paints
<input type="radio"/> Chlorine gas	<input type="radio"/> Pesticides
<input type="radio"/> Depleted uranium (If yes, explain)	<input type="radio"/> Radar/Microwaves
<input type="radio"/> Excessive vibration	<input type="radio"/> Sand/dust
<input type="radio"/> Fog oils (smoke screen)	<input type="radio"/> Smoke from burning trash or feces
<input type="radio"/> Garbage	<input type="radio"/> Smoke from oil fire
<input type="radio"/> Human blood, body fluids, body parts, or dead bodies	<input type="radio"/> Solvents
<input type="radio"/> Industrial pollution	<input type="radio"/> Tent heater smoke
<input type="radio"/> Insect bites	<input type="radio"/> Vehicle or truck exhaust fumes
<input type="radio"/> Ionizing radiation	<input type="radio"/> Other exposures to toxic chemicals or materials, such as ammonia, nitric acid, etc.: (If yes, explain)
<input type="radio"/> JP8 or other fuels	
<input type="radio"/> Lasers	

11. Since return from your deployment, have you had serious conflicts with your spouse, family members, close friends, or at work that continue to cause you worry or concern? ☐ Yes ☐ No ☐ Unsure

12. Have you ever had any experience that was so frightening, horrible, or upsetting that, IN THE PAST MONTH, you ....

- a. Have had nightmares about it or thought about it when you did not want to? ☐ Yes ☐ No  
b. Tried hard not to think about it or went out of your way to avoid situations that remind you of it? ☐ Yes ☐ No  
c. Were constantly on guard, watchful, or easily startled? ☐ Yes ☐ No  
d. Felt numb or detached from others, activities, or your surroundings? ☐ Yes ☐ No

- 13a. In the PAST MONTH, Did you use alcohol more than you meant to?

☐ Yes ☐ No

- b. In the PAST MONTH, have you felt that you wanted to or needed to cut down on your drinking?

☐ Yes ☐ No

- c. How often do you have a drink containing alcohol?

☐ Never ☐ Monthly or less ☐ 2 to 4 times a month ☐ 2 to 3 times a week ☐ 4 or more times a week

- d. How many drinks containing alcohol do you have on a typical day when you are drinking?

☐ 1 or 2 ☐ 3 or 4 ☐ 5 or 6 ☐ 7 to 9 ☐ 10 or more

- e. How often do you have six or more drinks on one occasion?

☐ Never ☐ Less than monthly ☐ Monthly ☐ Weekly ☐ Daily

14. Over the PAST MONTH, have you been bothered by the following problems?

- a. Little interest or pleasure in doing things  
b. Feeling down, depressed, or hopeless

Not at all	Few or several days	More than half the days	Nearly every day
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. Would you like to schedule a visit with a healthcare provider to further discuss your health concern(s)? ☐ Yes ☐ No

16. Are you currently interested in receiving information or assistance for a stress, emotional or alcohol concern? ☐ Yes ☐ No

17. Are you currently interested in receiving assistance for a family or relationship concern? ☐ Yes ☐ No

18. Would you like to schedule a visit with a chaplain or a community support counselor? ☐ Yes ☐ No



Date (dd/mm/yyyy):

## Health Care Provider Only

### Provider Review and Interview

1. Review symptoms and deployment concerns identified on form:

- ☐ Confirmed screening results as reported
- ☐ Screening results modified, amended, clarified during interview:

**2. Ask behavioral risk questions. Conduct risk assessment.**

- a. Over the PAST MONTH, have you been bothered by thoughts that you would be better off dead or of hurting yourself in some way? ☐ Yes ☐ No
- IF YES, about how often have you been bothered by these thoughts? ☐ Very few days ☐ More than half of the time ☐ Nearly every day
- b. Since return from your deployment, have you had thoughts or concerns that you might hurt or lose control with someone? ☐ Yes ☐ No ☐ Unsure

**3. If member reports positive or unsure response to 2a. or 2b., conduct risk assessment.**

- a. Does member pose a current risk for harm to self or others? ☐ No, not a current risk ☐ Yes, poses a current risk ☐ Unsure
- b. Outcome of assessment ☐ Immediate referral ☐ Routine follow-up referral ☐ Referral not indicated

#### 4. Alcohol screening result

- ☐ No evidence of alcohol-related problems.
- ☐ Potential alcohol problem (positive response to either question 13a. or 13b. and/or AUDIT-C (questions 13c.-e.) score of 4 or more for men or 3 or more for women).  
Refer to PCM for evaluation. ☐ Yes ☐ No

### 5. Traumatic Brain Injury (TBI) risk assessment

- ☐ No evidence of risk based on responses to questions 9.a. - d.  
☐ Potential TBI with persistent symptoms, based on responses to question 9d.  
 Refer for additional evaluation.
- ☐ Yes      ☐ No

6. Record additional questions or concerns identified by patient during interview:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This form must be completed electronically. Handwritten forms will not be accepted.

Service Member's Social Security Number:

Date (dd/mm/yyyy):

**Assessment and Referral:** After my interview with the service member and review of this form, there is a need for further evaluation and follow-up as indicated below. (More than one may be noted for patients with multiple concerns.)

7. Identified Concerns	Minor Concern	Major Concern	Already Under Care		8. Referral Information	Within 24 hours	Within 7 days	Within 30 days
			Yes	No				
<input type="radio"/> Physical Symptom(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	a. Primary Care, Family Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Exposure Symptom(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	b. Behavioral Health in Primary Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Depression symptoms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	c. Mental Health Specialty Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> PTSD symptoms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	d. Other specialty care:			
<input type="radio"/> Anger/Aggression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Audiology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Suicidal Ideation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Cardiology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Social/Family Conflict	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Dentistry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Alcohol Use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Dermatology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Other: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	ENT	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Comments: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____					GI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					Internal Medicine	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					Neurology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					OB/GYN	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					Ophthalmology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					Optometry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					Orthopedics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					Pulmonology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					Urology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					e. Case Manager, Care Manager	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					f. Substance Abuse Program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					g. Health Promotion, Health Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					h. Chaplain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					i. Family Support, Community Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
					j. Military OneSource	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Other: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
l. No referral made					<input type="radio"/>			

I certify that this review process has been completed.

10. Provider's signature and stamp:

S A M P L E

ICD-9 Code for this visit: V70.5 \_ F

Ancillary Staff/Administrative Section

11. Member was provided the following:	12. Referral was made to the following healthcare or support system:
<input type="radio"/> Health Education and Information	<input type="radio"/> Military Treatment Facility
<input type="radio"/> Health Care Benefits and Resources Information	<input type="radio"/> Division/Line-based medical resource
<input type="radio"/> Appointment Assistance	<input type="radio"/> VA Medical Center or Community Clinic
<input type="radio"/> Service member declined to complete form	<input type="radio"/> Vet Center
<input type="radio"/> Service member declined to complete interview/assessment	<input type="radio"/> TRICARE Provider
<input type="radio"/> Service member declined referral for services	<input type="radio"/> Contract Support: _____
<input type="radio"/> LOD	<input type="radio"/> Community Service: _____
<input type="radio"/> Other: _____	<input type="radio"/> Other: _____
	<input type="radio"/> None

## REFERENCES

1. Armed Forces Health Surveillance Center (AFHSC). 2011. Absolute and relative morbidity burdens attributed to various illnesses and injuries, U.S. Armed Forces, 2010. *MSMR*. 18(4):2-7
2. Armed Forces Health Surveillance Center (AFHSC). 2012. Costs of war: excess health care burdens during the wars in Afghanistan and Iraq (relative to the health care experience pre-war). *MSMR*. 19(11):2-9
3. Armed Forces Health Surveillance Center (AFHSC). 2013. Absolute and relative morbidity burdens attributed to various illnesses and injuries, U.S. Armed Forces, 2012. *MSMR*. 20(4):5-10
4. Armed Forces Health Surveillance Center (AFHSC). 2013. Hospitalizations among members of the active component, U.S. Armed Forces, 2012. *MSMR*. 20(4):11-17
5. Allison-Aipa TS, Ritter C, Sikes P, & Ball S. 2010. The impact of deployment on the psychological health status, level of alcohol consumption, and use of psychological health resources of postdeployed U.S. Army Reserve soldiers. *Mil Med*. 175(9):630-37
6. Ames GM, Cunradi CB, Moore RS, & Stern P. 2007. Military culture and drinking behavior among U.S. Navy careerists. *J Stud Alcohol Drugs*. 68(3):336-44
7. Back SE, Dansky BS, Carroll KM, Foa EB, & Brady KT. 2001. Exposure therapy in the treatment of PTSD among cocaine-dependent individuals: description of procedures. *J Subst Abuse Treat*. 21(1):35-45
8. Barlas FM, Higgins WB, Pflieger JC, & Diecker K. 2013. *2011 Health Related Behaviors Survey of Active Duty Personnel*. Fairfax, VA: ICF International
9. Blader JC. 2011. Acute inpatient care for psychiatric disorders in the United States, 1996 through 2007. *Arch Gen Psychiatry*. 68(12):1276-83
10. Bliese PD, Wright KM, Adler AB, Cabrera O, Castro CA, & Hoge CW. 2008. Validating the primary care posttraumatic stress disorder screen and the posttraumatic stress disorder checklist with soldiers returning from combat. *J Consult Clin Psychol*. 76(2):272-81
11. Bray RM, & Hourani LL. 2007. Substance use trends among active duty military personnel: Findings from the United States Department of Defense Health Related Behavior Surveys, 1980-2005. *Addiction*. 102:1092-101
12. Bray RM, Pemberton MR, Hourani LL, Witt M, Olmsted KLR, Brown JM, et al. 2009. *2008 Department of Defense Survey of Health-Related Behaviors Among*



*Active Duty Military Personnel*. Research Triangle Park, NC: Research Triangle Institute.

13. Bray RM, Pemberton MR, Lane ME, Hourani LL, Mattiko MJ, & Babeu LA. 2010. Substance use and mental health trends among U.S. military active duty personnel: key findings from the 2008 DoD Health Behavior Survey. *Mil Med*. 175(6):390-99
14. Brown JM, Bray RM, & Hartzell MC. 2010. A comparison of alcohol use and related problems among women and men in the military. *Mil Med*. 175(2):101-7
15. Brown RL, Leonard T, Saunders LA, & Papasouliotis O. 1997. A two-item screening test for alcohol and other drug problems. *J Fam Practice*. 44(2):151-60
16. Brown RL, Leonard T, Saunders LA, & Papasouliotis O. 2001. A two-item conjoint screen for alcohol and other drug problems. *J Am Board Fam Pract*. 14(2):95-106
17. Bursac Z, Gauss, CH, Williams, DZ, & Hosmer D. 2008. Purposeful selection of variables in logistic regression. *Source Code Biol Med*, 3(17):np
18. Carter AC, Capone C, & Short EE. 2011. Co-occurring Posttraumatic Stress Disorder and Alcohol Use Disorders in Veteran Populations. *J Dual Diagn*. 7(4):285-99
19. Chilcoat HD, & Breslau N. 1998. Investigations of causal pathways between PTSD and drug use disorders. *Addict Behav*. 23(6):827-40
20. Cohen SP, Brown C, Kurihara C, Plunkett A, Nguyen C, & Strassels SA. 2010. Diagnoses and factors associated with medical evacuation and return to duty for service members participating in Operation Iraqi Freedom or Operation Enduring Freedom: a prospective cohort study. *Lancet*. 375(9711):301-9
21. Cottler LB, Compton WM III, Mager D, Spitznagel EL, & Janca A. 1992. Posttraumatic stress disorder among substance users from the general population. *Am J Psychiat*. 149(5):664-70
22. Defense Health Information Management System (DHIMS). 2013. Essentris - Inpatient System. <http://dhims.health.mil/products/garrison/essentris.aspx>
23. Deployment Health Clinical Center (DHCC). 2013. Enhanced Post-Deployment Health Assessment (PDHA) Process (DD Form 2796). [http://www.pdhealth.mil/dcs/dd\\_form\\_2796.asp](http://www.pdhealth.mil/dcs/dd_form_2796.asp)
24. Deployment Health Clinical Center (DHCC). 2013. Post-Deployment Health Reassessment (PDHRA) Program (DD Form 2900). <http://www.pdhealth.mil/dcs/pdhra.asp>

25. Eisen SV, Schultz MR, Vogt D, Glickman ME, Elwy AR, Drainoni ML, et al. 2012. Mental and physical health status and alcohol and drug use following return from deployment to Iraq or Afghanistan. *Am J Public Health*. 102(1):66-73
26. Field A. 2009. *Discovering Statistics Using SPSS*. Thousand Oaks, CA: Sage Publishing
27. Gibbs DA, & Rae Olmsted KL. 2011. Preliminary examination of the Confidential Alcohol Treatment and Education program. *Mil Psychol*. 23(1):97-111
28. Heltemes KJ, Clouser MC, MacGregor AJ, Norman SB, & Galarneau MR. in press. Co-occurring mental health and alcohol misuse: Dual disorder symptoms in combat injured veterans. *Addict Behav*.
29. Hoge CW, Lesikar SE, Guevara R, Lange J, Brundage JF, Engel CC Jr, Orman DT. 2002. Mental disorders among U.S. military personnel in the 1990s: association with high levels of health care utilization and early military attrition. *Am J Psychiat*. 159(9):1576-83
30. Hoge CW, Auchterlonie JL, & Milliken CS. 2006. Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. *JAMA*. 295(9):1023-32
31. Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, & Koffman RL. 2004. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *New Engl J Med*. 351(1):13-22
32. Hoge CW, Toboni HE, Messer SC, Bell N, Amoroso P, & Orman DT. 2005. The occupational burden of mental disorders in the U.S. military: psychiatric hospitalizations, involuntary separations, and disability. *Am J Psychiat*. 162(3):585-91
33. Hosmer DW, & Lemeshow S. 2000. *Applied Logistic Regression, 2<sup>nd</sup> ed*. New York: John Wiley
34. Ilgen MA, Hu KU, Moos RH, & McKellar J. 2008. Continuing care after inpatient psychiatric treatment for patients with psychiatric and substance use disorders. *Psychiat Serv*. 59(9):982-88
35. Jacobsen LK, Southwick SM, & Kosten TR. 2001. Substance use disorders in patients with posttraumatic stress disorder: a review of the literature. *Am J Psychiat*. 158(8):1184-90
36. Jacobson IG, Ryan MA, Hooper TI, Smith TC, Amoroso PJ, Boyko EJ, et al. 2008. Alcohol use and alcohol-related problems before and after military combat deployment. *JAMA*. 300(6):663-75

37. Kranzler HR, & Rosenthal, RN. 2003. Dual diagnosis: Alcoholism and comorbid psychiatric disorders. *Am J Addict.* 12(Suppl 1):S26-S40
38. Kroenke K, Spitzer RL, & Williams JB. 2003. The Patient Health Questionnaire-2: validity of a two-item depression screener. *Med Care.* 41(11):1284-92
39. Leeies M, Pagura J, Sareen J, & Bolton JM. 2010. The use of alcohol and drugs to self-medicate symptoms of posttraumatic stress disorder. *Depress Anxiety.* 27(8):731-36
40. Lemke S, & Schaefer JA. 2010. VA nursing home residents with substance use disorders: Mental health comorbidities, functioning, and problem behaviors. *Aging Ment Health.* 14(5):593-602
41. Luxton DD, Trofimovich L, & Clark LL. 2013. Suicide risk among U.S. service members after psychiatric hospitalization, 2001-2011. *Psychiat Serv.* 64(7):626-9
42. Magidson JF, Wang S, Lejuez CW, Iza M, & Blanco C. 2013. Prospective study of substance-induced and independent major depressive disorder among individuals with substance use disorders in a nationally representative sample. *Depress Anxiety.* 30(6):538-45
43. Marshall DL, Prescott MR, Liberzon I, Tamburrino MB, Calabrese JR, & Galea S. 2012. Coincident posttraumatic stress disorder during and after deployment among Army National Guard Soldiers. *Drug Alc Depend.* 124(3):193-199
44. McDevitt-Murphy ME, Williams JL, Bracken KL, Fields, JA, Monahan CJ, & Murphy JG. 2010. PTSD symptoms, hazardous drinking, and health functioning among U.S. OEF and OIF Veterans presenting to primary care. *J Trauma Stress.* 23(1):108-111
45. McFarlane AC. 1998. Epidemiological evidence about the relationship between PTSD and alcohol abuse: the nature of the association. *Addict Behav.* 23(6):813-25
46. Meyer GS, & Krakauer H. 1998. Validity of the Department of Defense Standard Inpatient Data Record for quality management and health services research. *Mil Med.* 163(7):461-65
47. Milliken CS, Auchterlonie JL, & Hoge CW. 2007. Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq war. *JAMA.* 298(18):2141-48
48. National Center for Health Statistics (NCHS). 2009. International Classification of Diseases, Ninth Revision (ICD-9). <http://www.cdc.gov/nchs/icd/icd9.htm>

49. O'Brien CP, Amaro HD, Beale RR, Bray RM, Caetano R, Falco M, et al. 2012. *Substance Use Disorders in the U.S. Armed Forces*. Washington, D.C.: Institute of Medicine of the National Academies Press.
50. Pietrzak RH, Goldstein RB, Southwick SM, & Grant BF. 2011. Prevalence and Axis I comorbidity of full and partial posttraumatic stress disorder in the United States: results from Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions. *J Anxiety Disord.* 25(3):456-65
51. Prins A, Ouimette P, Kimerling R, Cameron RP, Hugelshofer DS, Shaw-Hegwer J, et al. 2004. The primary care PTSD screen (PC-PTSD): development and operating characteristics. *Int J Psychiatry Clin Pract.* 9:9-14
52. Ramchand R, Miles J, Schell T, Jaycox L, Marshall GN, & Tanielian T. 2010. Prevalence and correlates of drinking behaviors among previously deployed military and matched civilian populations. *Mil Psychol.* 23:6-21
53. Riggs DS, Rukstalis M, Volpicelli JR, Kalmanson D, & Foa EB. 2003. Demographic and social adjustment characteristics of patients with comorbid posttraumatic stress disorder and alcohol dependence: Potential pitfalls to PTSD treatment. *Addict Behav.* 28(9), 1717-30
54. Ritchie EC. 2007. Update on combat psychiatry: from the battle front to the home front and back again. *Mil Med.* 172(12):11-14
55. Ritchie EC, Benedek D, Malone R, & Carr-Malone R. 2006. Psychiatry and the military: an update. *Psychiat Clin N Am.* 29(3):695-707
56. Robinson J, Sareen J, Cox BJ, & Bolton J. 2009. Self-medication of anxiety disorders with alcohol and drugs: Results from a nationally representative sample. *J Anxiety Disord.* 23(1):38-45
57. Rosen CS, Kuhn E, Greenbaum MA, & Drescher KD. 2008. Substance abuse-related mortality among middle-aged male VA psychiatric patients. *Psychiat Serv.* 59(3):290-96
58. Rothman KJ, Greenman S, & Lash TL. 2008. *Modern Epidemiology*, 3<sup>rd</sup> ed. Philadelphia, PA: Lippincott Williams & Wilkins
59. Rubertone MV, & Brundage JF. 2002. The Defense Medical Surveillance System and the Department of Defense serum repository: glimpses of the future of public health surveillance. *Am J Public Health.* 92(12):1900-4
60. Rundell JR. 2006. Demographics of and diagnoses in Operation Enduring Freedom and Operation Iraqi Freedom personnel who were psychiatrically evacuated from the theater of operations. *Gen Hosp Psychiat.* 28(4):352-56

61. Russo J, Roy-Byrne PP, Jaffe C, Ries R, Dagadakis C, & Avery D. 1997. Psychiatric status, quality of life, and level of care as predictors of outcomes of acute inpatient treatment. *Psychiat Serv.* 48:1427-34
62. Santiago PN, Wilk JE, Milliken CS, Castro CA, Engel CC, & Hoge CW. 2010. Screening for alcohol misuse and alcohol-related behaviors among combat veterans. *Psychiat Serv.* 61(6):575-81
63. Schmutte T, Dunn CL, & Sledge WH. 2010. Predicting time to readmission in patients with recent histories of recurrent psychiatric hospitalization: a matched-control survival analysis. *J Nerv Ment Dis.* 198(12):860-63
64. Scott JC, Pietrzak RH, Mattocks K, Southwick SM, Brandt C, & Haskell S. 2013. Gender differences in the correlates of hazardous drinking among Iraq and Afghanistan veterans. *Drug Alcohol Depen.* 127(1-3):15-22
65. Shen YC, Arkes J, & Williams TV. 2012. Effects of Iraq/Afghanistan deployments on major depression and substance use disorder: Analysis of active duty personnel in the US military. *Am J Public Health.* 102(1):80-87
66. Shipherd JC, Stafford J, & Tanner LR. 2005. Predicting alcohol and drug abuse in Persian Gulf War Veterans: What role do PTSD symptoms play? *Addict Behav.* 30:595-99
67. Skopp NA, Swanson R, Luxton DD, Reger MA, Trofimovich L, First M, Maxwell J, & Gahm GA. 2012. An examination of the diagnostic efficiency of post-deployment health screens. *J Clin Psychol.* 68(12):1253-65
68. Smith MW, Lemke S, & Schaefer J. 2011. Substance use disorders and health care costs among veterans affairs nursing home residents. *Med Care.* 49(6):538-44
69. Sonne SC, Back SE, Diaz Zuniga C, Randall CL, & Brady KT. 2003. Gender differences in individuals with comorbid alcohol dependence and post-traumatic stress disorder. *Am J Addict.* 12(5):412-23
70. Spitzer RL, Kroenke K, & Williams JB. 1999. Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. *JAMA.* 282(18):1737-44.
71. Tanielian TL & Jaycox LH, eds. 2008. *Invisible wounds of war: Psychological and cognitive injuries, their consequences, and services to assist recovery.* Santa Monica, CA: Rand Corporation
72. Thomas JL, Wilk JE, Riviere LA, McGurk D, Castro CA, & Hoge CW. 2010. Prevalence of mental health problems and functional impairment among active

component and National Guard soldiers 3 and 12 months following combat in Iraq. *Arch Gen Psychiatry*. 67(6):614-23

73. United States Central Command (USCENTCOM). 2013. General Order Number 1C: Prohibited Activities for U.S. Department of Defense (DoD) Personnel Present within the United States Central Command (USCENTCOM) Area of Responsibility. [http://www.cusnc.navy.mil/ctf-ia/documents/GO-1C\\_20130521.pdf](http://www.cusnc.navy.mil/ctf-ia/documents/GO-1C_20130521.pdf)
74. Westphal RJ. 2007. Fleet leaders' attitudes about subordinates' use of mental health services. *Mil Med*. 172(11):1138-43
75. Wilk JE, Bliese PD, Kim PY, Thomas JL, McGurk D, & Hoge CW. 2010. Relationship of combat experiences to alcohol misuse among U.S. soldiers returning from the Iraq war. *Drug Alcohol Depend*. 108(1-2):115-21
76. Wojcik BE, Akhtar FZ, & Hassell LH. 2009. Hospital admissions related to mental disorders in U.S. Army soldiers in Iraq and Afghanistan. *Mil Med*. 174(10):1010-18
77. Zhang J, Harvey C, & Andrew C. 2011. Factors associated with length of stay and the risk of readmission in an acute psychiatric inpatient facility: a retrospective study. *Aust NZ J Psychiat*. 45(7):578-85